

ONKYO SERVICE MANUAL

STEREO CASSETTE TAPE DECK

MODEL TA-2090

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK \triangle ON THE SCHEMATIC DIAGRAM AND IN THE PARTS LIST ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE THESE COMPONENTS WITH ONKYO PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL.

MAKE LEAKAGE-CURRENT OR RESISTANCE MEASUREMENTS TO DETERMINE THAT EXPOSED PARTS ARE ACCEPTABLY INSULATED FROM THE SUPPLY CIRCUIT BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

SPECIFICATIONS

| | |
|------------------------|---|
| Track Format: | 4 tracks, 2 channels |
| Erasing System: | AC erase |
| Tape Speed: | 4.8 cm/sec. (1-7/8 i.p.s) |
| Wow & Flutter: | 0.02% (WRMS) |
| Frequency Response: | 20-18,000Hz (25-17,000Hz \pm 3dB) (normal position tape) 20-20,000Hz (25-19,000Hz \pm 3dB) (high position tape) 20-22,000Hz (25-21,000Hz \pm 3dB) (metal position tape) |
| Signal-to-Noise Ratio: | 60dB (metal position tape, Dolby NR out). A noise reduction of 10dB above 5kHz and 5dB at 1kHz is possible with Dolby B NR. A noise reduction of 20dB at 5kHz is possible with Dolby C NR. A noise reduction of 30dB is possible with dbx NR. |
| Input Jacks: | Mic jack ϕ : 2 Input sensitivity: 0.3mV/600 ohms Input impedance: 5 kohms Line IN: 2 Input sensitivity: 60mV Input impedance: 50 kohms DIN In Jack: 1 Input sensitivity: 0.1mV/1 kohm Input impedance: 2.7 kohms |

ONKYO
AUDIO COMPONENTS

| | |
|--------------------|--|
| Outputs: | Line OUT: 2 |
| | Std output level: 1100mV (odB) |
| | Optimum load impedance: over 10 kohms |
| | Headphone Jack: 1 |
| | Optimum load impedance: 8--200 ohms |
| | DIN Out Jack: 1 |
| | Standard output level: 1100mV (at OdB) |
| | Opt load impedance: over 10 kohms |
| Motors: | Brushless DD motor: 1 DC motors: 2 |
| Heads: | Rec/PB: Sendust combination |
| | Erase: Dual gap ferrite |
| Semiconductors: | TR:130 Diodes:68 IC:38 LED:33 |
| Power Consumption: | 47 watts |
| Dimensions: | 450(W) x 100(H) x 392(D) mm (17-11/16" x 3-15/16" x 15-7/16") |
| Weight: | 9 kg. (19.8 lbs.) |

- Specifications and external appearance are subject to change without notice because of product improvements.

SERVICE PROCEDURES

1. Insulation resistance measurement

Connect the insulating-resistance tester between the plug of power supply cord and chassis.

Specifications; 500 V more than 10 MΩ

2. Replacing the lamps

This unit used the lamps listed below.

| Circuit No. | Parts No. | Description |
|-------------|-----------|------------------|
| Mechanism ⑥ | 24606173 | 50mA, 14V. Lamp |
| PL701 | 210090 | 150mA, 14V. Lamp |

CAUTION: Before replacing the lamps, be sure to unplug the power supply cable.

FEATURES

3-Head Configuration

Having three heads is a must for all serious recordists because it allows monitoring the just-recorded signal while the recording is in progress. Another advantage is that the recording and playback head gap widths can be optimized for their respective tasks. To further enhance performance, the recording and playback heads are made of Sendust.

3 Motors with Direct-Drive Capstan Motor

Tape is driven by a brushless direct-drive motor. A second motor drives the reel tables and a third motor moves the head assembly up and down. This lowers wow and flutter to an insignificant 0.02% (WRMS).

Real Time Tape Counter

The electronic tape counter shows either the elapsed time during playback or recording or the time remaining until the end of the cassette in minutes and seconds.

Dolby B and C NR, dbx NR and Dolby HX Pro

This unit has all three of the most frequently used noise reduction systems, Dolby B NR, Dolby C NR and dbx NR, to meet all kinds of recording needs. This deck also has Dolby HX Pro to help prevent tape saturation and allow a tape to contain a wider dynamic range.

Fully Automatic ACCUBIAS

To fine tune the recording bias to the optimum point, simply put the deck in the rec/pause standby mode and press the ACCUBIAS button.

Multiple Mode Display for Six Deck Operating Modes

The head block position and tape speed are each shown in a graphic format by a total of six LEDs to permit quick confirmation of the current deck mode.

Auto Music Control System (A.M.C.S.)

The AMCS automatically locates the beginning of every song on a cassette in either the forward or the reverse direction. When the forward AMCS button is pressed during the play mode, the tape is rapidly wound to the beginning of the next song and the first 10 seconds (approximately) is played. Then the tape is rapidly wound forward to the beginning of the next song and about 10 seconds is played again. This process continues until the PLAY button is pressed to cancel AMCS operation and return to normal playback. When the reverse AMCS button is pressed during the play mode, this process is performed in the reverse direction.

Bright Fluorescent Peak Hold Level Meters

The colorful left and right peak hold level meters react instantaneously to changes in signal level and a peak-hold system maintains peak readings for a second to make sure you don't miss potentially harmful input signals when setting the recording level.

Single Song, Whole Side and Block Repeat Modes

With this deck, you have a choice of three ways to play a tape repeatedly: (1) Single repeat for one song; (2) Full repeat for an entire cassette side; (3) Block repeat for a section of the cassette between the [0:00] counter reading and any other counter reading.

Auto Space Rec Mute Button

This button lets you insert unrecorded sections five seconds in length with one touch simplicity.

Remote Control Unit Connector

With an optional remote control unit (such as the RC-5T), this unit can be controlled even while you are relaxing in your favorite chair. All transport modes are included: record, play, fast forward, rewind, stop and pause.

DESCRIPTION OF THE LM6402H-425 MICRO COMPUTER (DECK MECHANISM CONTROL)

1. ACCU BIAS operation

In more conventional optimum bias adjustment systems, ACCU BIAS operations were performed almost entirely by hardware. In the TA-2090, however, the major operations are handled by microcomputer. And in addition to the 5-bit D/A converter which enables greater accuracy in the adjustments, an operation which resembles successive comparisons is executed to further reduce the adjustment time. See Figure 1 for the block diagram.

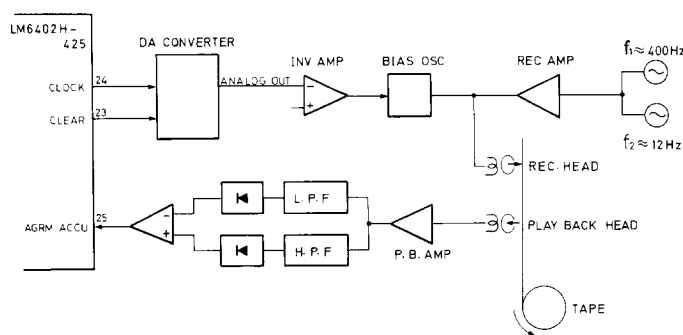


Fig. 1 ACCU BIAS block diagram

When the ACCU BIAS operation is started, a 400Hz/12kHz mixed signal is recorded, the bias current in this case being controlled by a signal from the microcomputer. The playback signal is separated by filter into the original 400Hz and 12kHz signals, and after being rectified these signals are passed to a comparator where a comparison check is made to see if one of the signals is greater than the other. A HIGH comparator output indicates that the 12kHz signal is greater than the 400Hz signal, and a LOW output indicates that the 400Hz is lower than the 12kHz.

Although the bias was changed one step at a time from greater bias levels to smaller levels in more conventional systems, this would involve twice the amount of time if a 5-bit D/A converter was used. For this reason, optimum bias is found by the following method in the TA-2090.

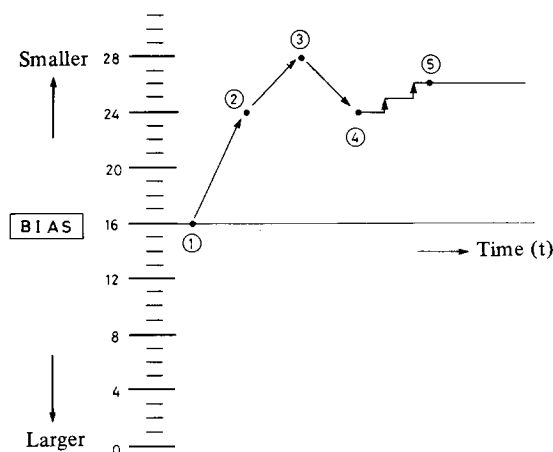


Fig. 2 Bias adjustment method

First the bias is set to step 16 which is in the center of the bias range shown in Figure 2. Then the 400Hz/12kHz mixed signal is subjected to a comparison operation to see which component is larger. If the 12kHz signal is larger, then the bias level is too small. If the 400Hz signal is larger, on the other hand, the bias level is too large. In the example shown in Figure 2, the bias level at step 16 is too large, so the bias is reduced by $\frac{1}{4}$ of the total range (8 steps) to position (2) where the 400Hz and 12kHz components are again compared. If the 400Hz signal is still larger than the 12kHz signal, the bias level is further reduced by $\frac{1}{4}$ of the total (4 steps) (3) and the components then compared again. This procedure is used for rough adjustment of the optimum bias. If at this stage, the 12kHz signal is now found to be greater than the 400Hz signal, the optimum bias is known to exist between steps 24 and 28. The operation is now switched to fine adjustment – the bias is increased by $\frac{1}{4}$ and then reduced one step at a time from step 24. The step where the component signal size relationship is switched from $400 > 12k$ to $12k > 400$ is taken as the optimum bias (5), and the bias is set at this level. This fine adjustment operation proceeds only from greater to lower bias levels in order to avoid misoperation due to possible drop outs. The effects of a drop out on the bias adjustment when the bias is changed from a smaller to a larger level is indicated in Figure 3, while the reverse case is indicated in Figure 4.

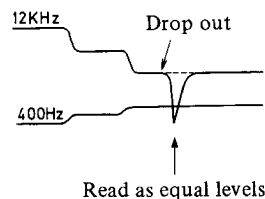


Fig. 3 Example of misoperation caused by drop out

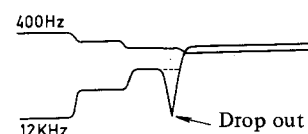


Fig. 4 Example where effect of drop out is avoided

2. DA Converter and Data Setting Method

The D/A converter circuitry is outlined in Figure 5, and the logic diagram of the 4024BP 7-stage binary counter in Figure 6. The 4024BP counter is counted up each time a negative input pulse is applied to the clock pin, the output data being obtained from Q1 thru Q7 (although only Q1 thru Q5 are actually used). This output is converted to an analog quantity when passed through the R-2R rudder resistance circuit.

If the power supply voltage is 5V, the voltage per step is approximately 0.156V with a total of about 4.84V. Since this 4024BP is only involved in up counting, setting to a value lower than the current value (that is, greater bias) results in an initial clearing and output of pulses until the set value is reached.

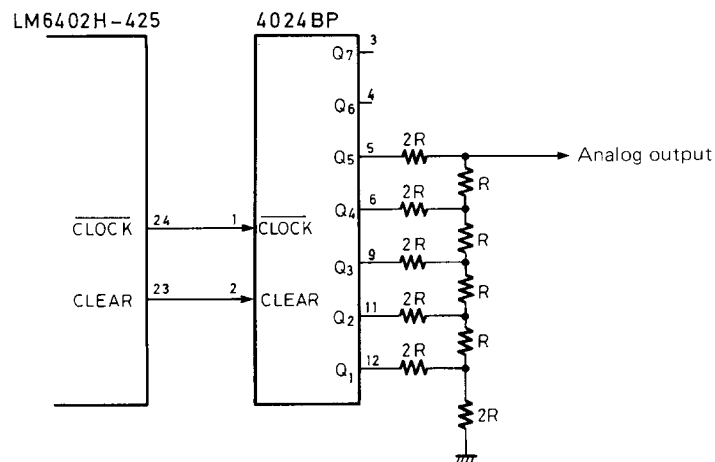


Fig. 5 DA converter circuitry

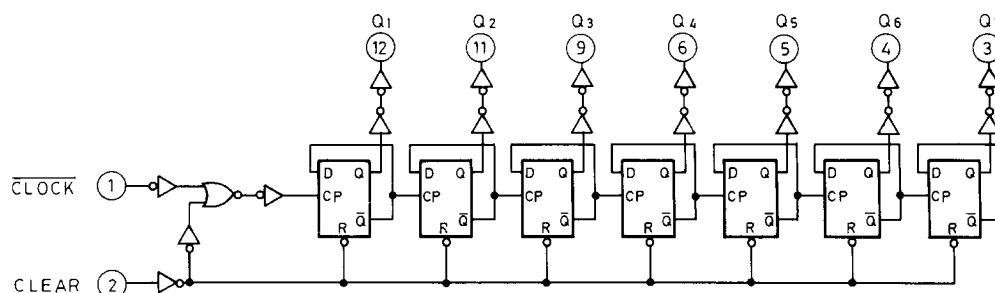


Fig. 6 4024BP logic circuit

3. Input Port Expander IC

The equivalent circuit of the LC7800 used to expand input ports is shown in Figure 7. This IC includes four 4-bit input ports, one 4-bit output port, and one 4-bit selector input port. When BA of the selector input is set to LOW and the other bits to HIGH, the A0" A1" A2" A3 input port is connected to the D0" D1" D2" D3 output port. And if only the BB bit is set to LOW, the B0" B1" B2" B3 input is selected. Hence, a LOW level signal is applied to the selector port bits in cyclic order, and the operation indicator LEDs are switched on and off dynamically in combination with the #13, #14, and #15 LED output ports while input port data is being read out.

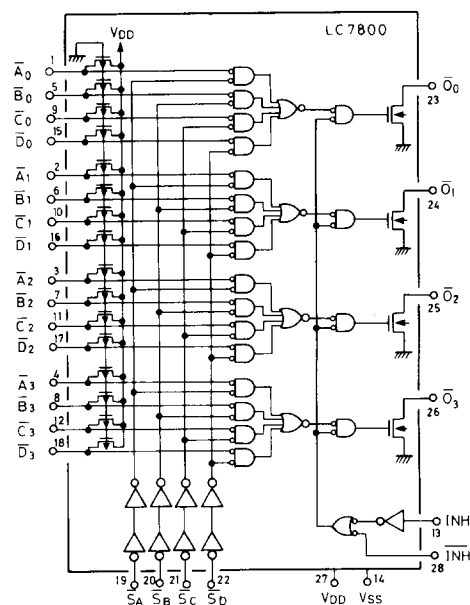
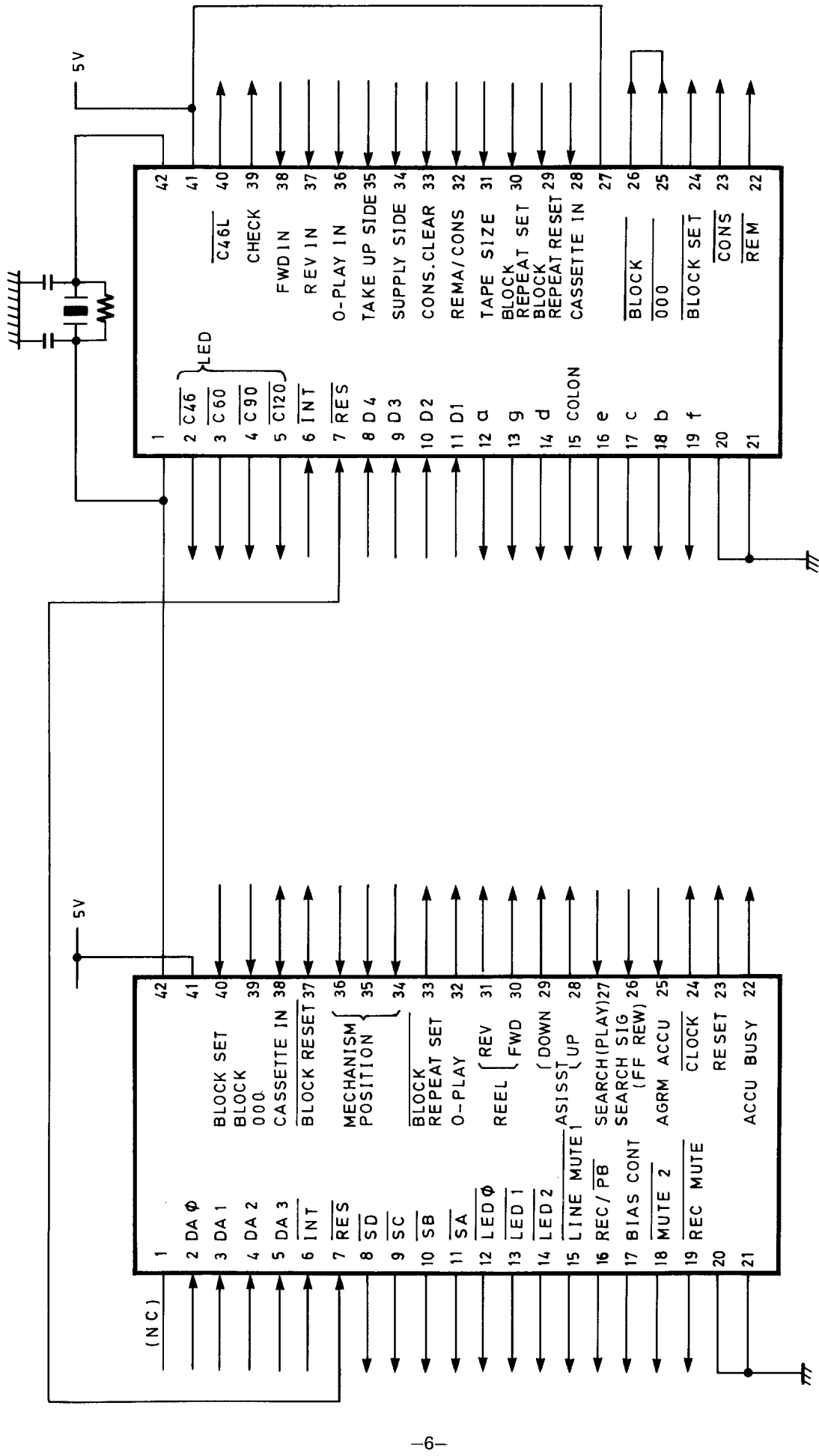


Fig. 7 LC7800 equivalent circuit

LM6402H-425 PIN ALLOCATION

| Pin no. | Name | Function | Classification |
|---------|--|---|----------------|
| 2~5 | DA0~DA3 | Reading of data from the inport port expander IC | IN |
| 6 | $\overline{\text{INT}}$ | Rotation signal input (for auto-stop operation) | IN |
| 8~11 | $\overline{\text{SA}} \sim \overline{\text{SD}}$ | Input port expander IC and dynamic LED selector IC | OUT |
| 12~14 | $\overline{\text{LED0}} \sim \overline{\text{LED3}}$ | Operation display dynamic LED data output | OUT |
| 15 | $\overline{\text{LINE MUTE 1}}$ | Line muting output signal generated when the power is switched on, and during ACCU BIAS operation. | OUT |
| 16 | REC/PB | Output signal for muting DIN outputs when recording | OUT |
| 17 | BIAS CONT. | Output signal for control of bias oscillator | OUT |
| 18 | $\overline{\text{MUTE2}}$ | Signal for switching muting off during playback | OUT |
| 19 | $\overline{\text{REC. MUTE}}$ | Signal for muting the recording amplifier output | OUT |
| 22 | ACCU BUSY | Output signal generated during ACCU BIAS operation | OUT |
| 23 | RESET | Signal for resetting the D/A converter | OUT |
| 24 | CLOCK | Signal for setting data in the D/A converter | OUT |
| 25 | AGRM ACCU | ACCU BIAS matching input | OUT |
| 26 | SEARCH SIG (HIGH) | Input signal from high-speed travel tune-selector. | IN |
| 27 | SEARCH SIG (LOW) | Input signal from low-speed travel tune-selector amplifier | IN |
| 28 | UP | Output signal for driving the assist motor towards the PLAY position. | OUT |
| 29 | DOWN | Output signal for driving the assist motor towards the FF/REW position. | OUT |
| 30 | FWD | Output signal for driving the reel motor towards the FF position. | OUT |
| 31 | REW | Output signal for driving the reel motor towards the REV position. | OUT |
| 32 | O-PLAY | Reel motor torque switching output | OUT |
| 33 | $\overline{\text{BLOCK SET}}$ | Output which informs the counter IC that the BLOCK SET key has been pressed. | OUT |
| 34~36 | a,b,c | Input ports for signal from the mechanism position switches | IN |
| 37 | BLOCK RESET | Output which informs the counter IC that the BLOCK RESET key, or any other key apart from the BLOCK SET key has been pressed. | OUT |
| 38 | CASSETTE IN | Input involved in detection of cassette half, and output which stops the capstan motor when an abnormal mechanism status is detected. | I/O |
| 39 | $\overline{\text{BLOCK MATCHING \& 000 INPUT}}$ | Input of 000 input signal and BLOCK matching signal from the counter IC. | IN |
| 40 | $\overline{\text{BLOCK SET}}$ | Input which accepts signals from the counter IC during BLOCK SET. | IN |

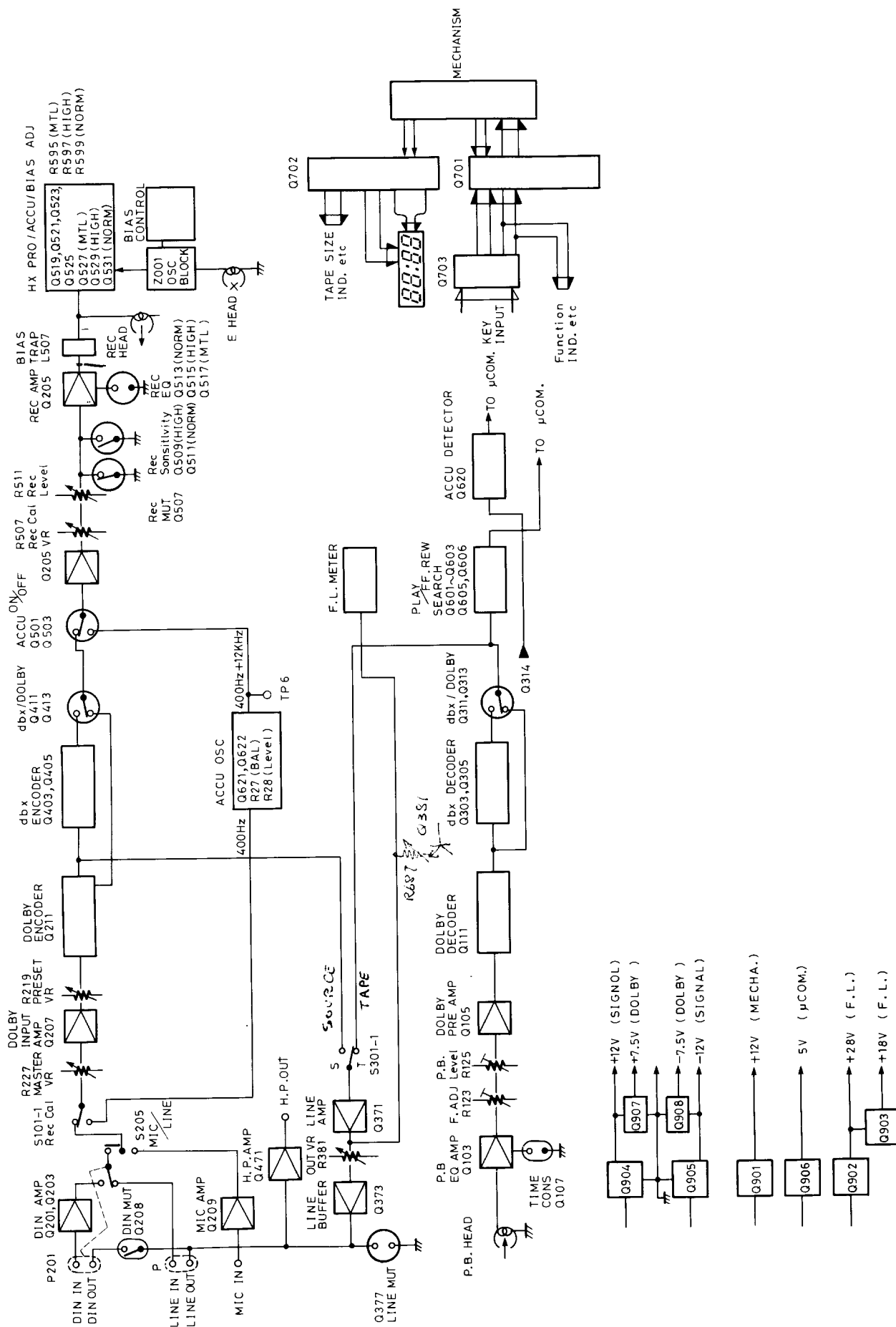
MICRO COMPUTER



Q702
LM6402H-424

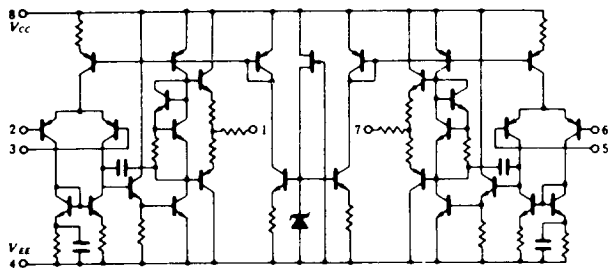
Q701
LM6402H-425

BLOCK DIAGRAM

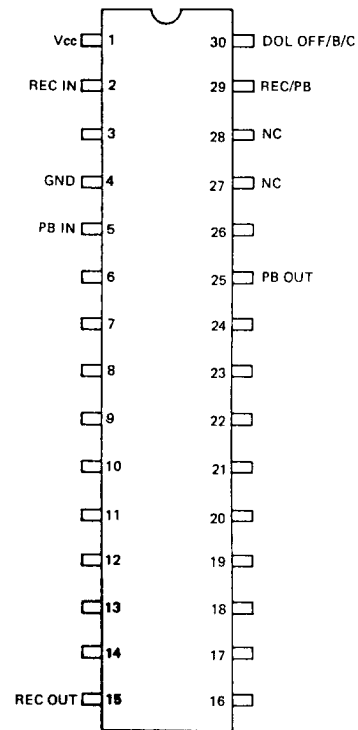


BLOCK DIAGRAM OF IC

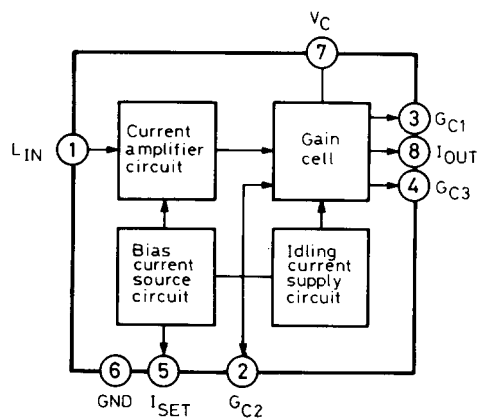
NJM4558, 4559, 4560 (Operation amplifier)



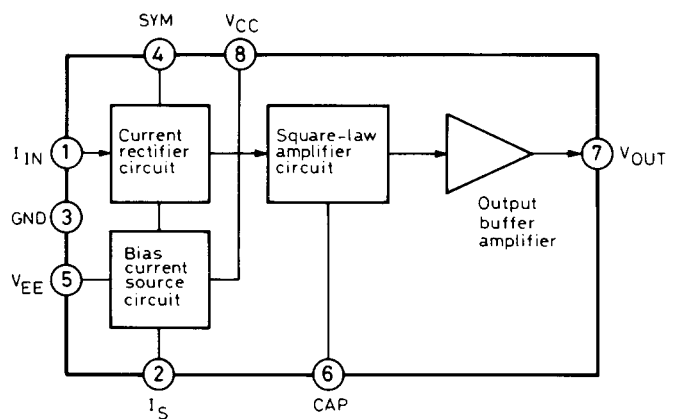
HA-12058 NT
(DOLBY B & C TYPE NOISE REDUCTION SYSTEM)



μ PC1252H2 (DBX)

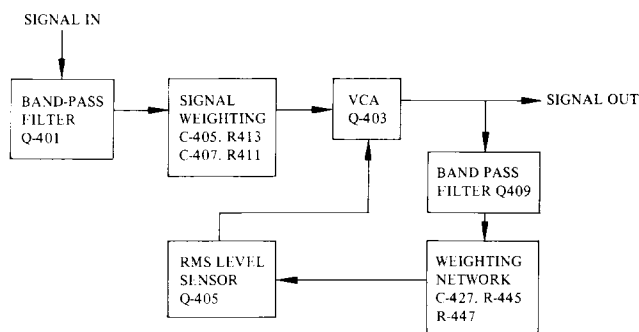


μ PC1253H2



BLOCK DIAGRAM OF DBX

dbx BLOCK DIAGRAM
(ENCODER)



SIGNAL WEIGHTING

Encoder side: Pre-emphasis Decoder side: De-emphasis Pre-emphasis raises the high frequencies of the input signal and de-emphasis returns the high frequencies to their original levels during playback. In addition to reducing overall noise, the effect of this process is to provide even more powerful high end noise reduction.

WEIGHTING NETWORK

This lowers the amount of VCA amplification for signals having a high degree of high frequency components in order to prevent distortion that would otherwise result if these high frequencies were recorded in the raised level set during pre-emphasis.

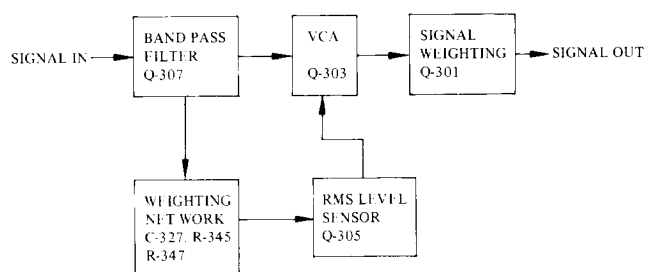
VCA (Voltage Controlled Amplifier)

An amp in which the amount of amplification is changed in a linear, logarithmic manner by the control DC voltage received from an external source. Serves to compress and expand the dynamic range of the input signal.

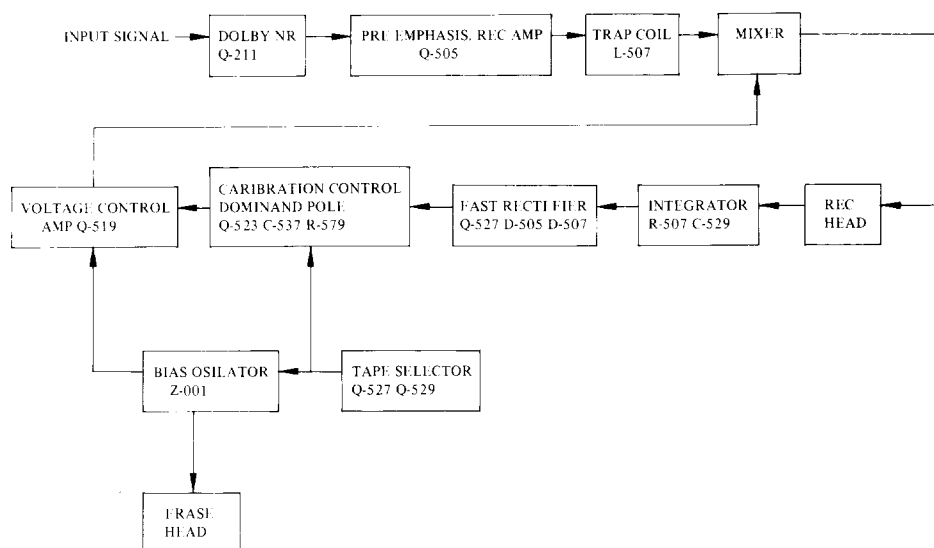
RMS LEVEL SENSOR

Detects the effective value (root mean square value) of the input signal and converts it into a DC voltage proportional to the logarithm of that level.

dbx BLOCK DIAGRAM
(DECODER)



BLOCK DIAGRAM OF HX PRO

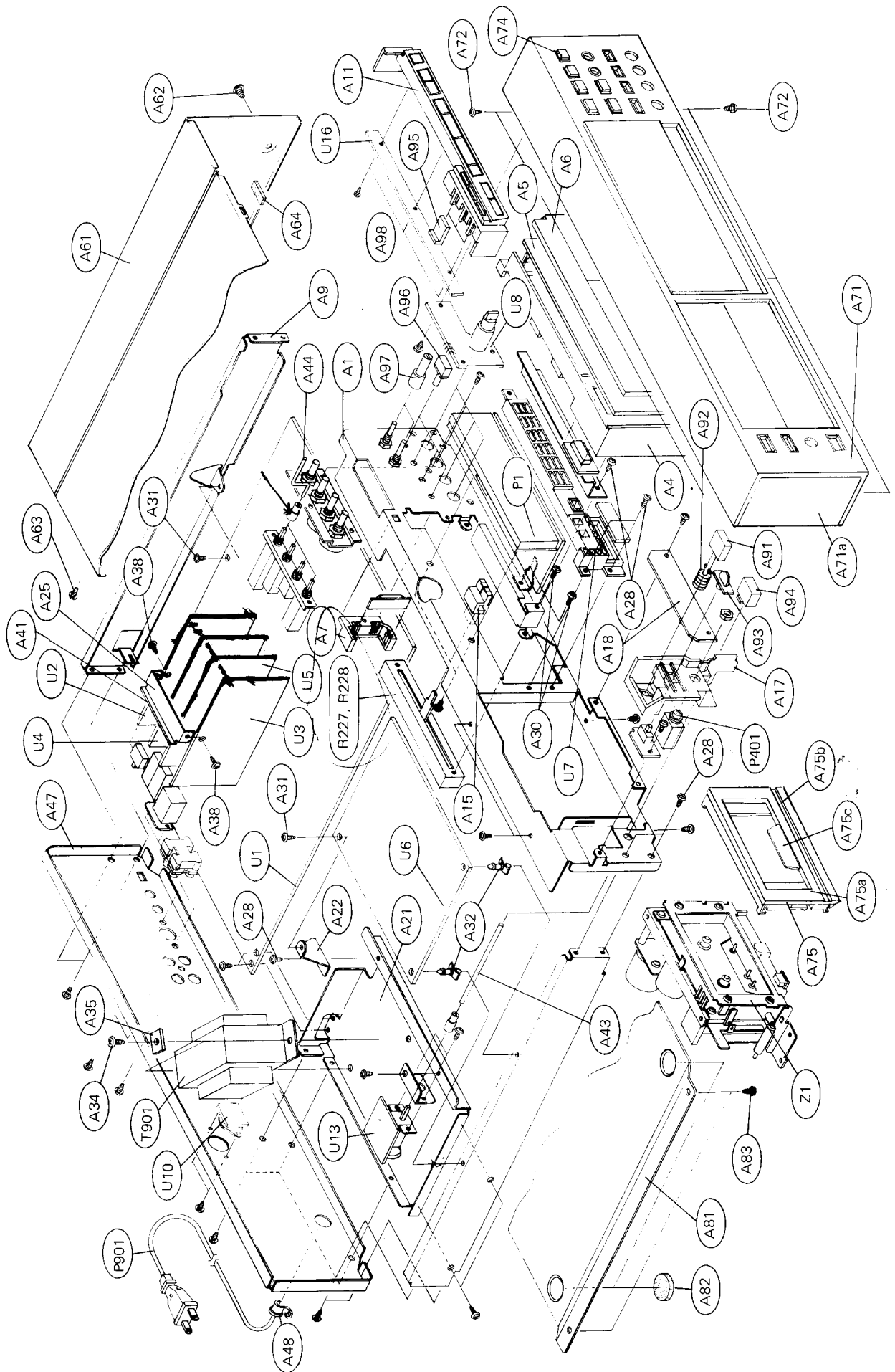


Dolby HX Pro

* Principle

Prevents disruption of flat frequency response caused by the biasing effect of high frequencies by continuously adjusting the bias current in response to the amount of frequencies over 10kHz in the signal being recorded.

CHASSIS-EXPLODED VIEW



CHASSIS-EXPLODED VIEW PARTS LIST

| REF. NO. | PART NO. | DESCRIPTION | REF. NO. | PART NO. | DESCRIPTION |
|----------|----------------------|-------------------------------|------------|-----------|--|
| A1 | 27110224A | Front bracket | A81 | 27170180 | Bottom board |
| A4 | 27190293 | Holder | A82 | 27175028 | Leg |
| A5 | 28133106A | Back plate | A83 | 834430068 | 3TTS+6B (BC), Tapping screw |
| A5a | 28199126A | Film | A91 | 28321636A | Knob, eject |
| A6 | 28191263A | Clear plate, edge | A92 | 27180179 | Spring |
| A7 | 27190295 | Holder, lamp | A93 | 28321681 | Knob, switch |
| A9 | 27115164A | Side brace† | A94 | 28321394 | Knob, power |
| A11 | 28321625 | Knob ass'y. | A95 | 28321673 | Knob, tape |
| A12 | 27262300 | Plate | A96 | 28321637A | Knob, push |
| A14 | 27300702 | Plate, slide volume | A97 | 28321638A | Knob S |
| A15 | 28321640A | Knob, slide volume | A98 | 28321639A | Knob, output |
| A16 | 27180218 | Spring, ground | P1 | 212024 | LB135—L16XMC2T34, Level meter |
| A17 | 27190296A | Holder H | P401 | 25045124 | HLJ—4608—01—020, Stereo headphone terminal |
| A18 | 28175093 | Insulator plate | Δ P901 | 253097B | AS—UC—3, Power supply cord D |
| A19 | 27150186 | Shielded plate | | 253099B | AS—CEE, Power supply cord G/W |
| A20 | 87643008 | W3x8F (BC), Flat washer | R227, R228 | 6142035 | N100LG50KA25F, Resistor, variable, input level |
| A21 | 27130362A | Bracket, power transformer | Δ S902 | 25065123 | NSS—1258P, Voltage selector switch W |
| A22 | 27140917 | Bracket S | Δ T901 | 230823 | NPT—846D, power transformer D |
| A24 | 27140918 | Bracket D | | 230824 | NPT—846G, power transformer G |
| A25 | 27140919 | Bracket U | | 230825 | NPT—846D/G, power transformer W |
| A26 | 27140577 | Bracket DIN | U1 | 1138572 | NAAF—2072, Main circuit pc board ass'y |
| A27 | 833420068 | 2TTP+6B (BC), Tapping screw | U2 | 1138573 | NADOL—2073, Dolby decoder pc board ass'y |
| A28 | 834430068 | 3TTS+6B (BC), Tapping screw | U3 | 1138574 | NADOL—2074, Dolby encoder pc board ass'y |
| A29 | 834426068 | 2.6TTS+6B (BC), Tapping screw | U4 | 1138575 | NADBX—2075, DBX decoder pc board ass'y |
| A30 | 82143006 | 3P+6FN (BC), Pan head screw | U5 | 1138576 | NADBX—2076, DBX encoder pc board ass'y |
| A31 | 831430088 | 3TTW+8B (BC), Tapping screw | U6 | 1138577 | NACOC—2077, Control circuit pc board ass'y |
| A32 | 27190009 | Holder | U7 | 1138578 | NADIS—2078, Display circuit pc board ass'y |
| A34 | 830440109 | 4TTC+10C (BC), Tapping screw | U8 | 1138579 | NASW—2079, Switch pc board ass'y |
| A35 | 870065 | Special washer | U9 | 1138580 | NADIS—2080, Display circuit pc board ass'y |
| A36 | 86414010 | FWN4x10FN, Flange nut | U10 | 1138581 | NARM—2081, Remote control terminal pc board ass'y |
| A38 | 880009 | Rivert | U11 | 1138582 | NASW—2082, Switch pc board ass'y |
| A39 | 262011 | Tape, silver | U12 | 1138583 | NASW—2083, Switch pc board ass'y |
| A40 | 28140555 | 10x36x3mm, Cushion | U13 | 1138584 | NASW—2084, Power switch pc board ass'y |
| A41 | 28140559 | 10x55x10mm, Cushion | U14 | 1138585 | NAPL—2085, Edge light pc board ass'y |
| A43 | 27260148 | Shaft | U15 | 1138586 | NAVR—2086, Record carib-ration volume pc board ass'y |
| A44 | 27260150A | Shaft P | U16 | 1138587 | NASW—2087, Switch pc board ass'y |
| A47 | 27120624 | Back panel D | Z1 | 244066 | NDM—58, Tape mechanism ass'y |
| Δ A48 | 27120625 | Back panel G | | | |
| | 27120626 | Back panel W | | | |
| | 270025 | SR—3P—4, Strainrelief D | | | |
| | | SR—4K—4, Strainrelief G/W | | | |
| A50 | 801230 | 3STS+8BQ (BC), Tapping screw | | | |
| A51 | 834430108 | 3TTS+10B (BC), Tapping screw | | | |
| A52 | 82142604 | 2.6P+4F (BC), Pan head screw | | | |
| A61 | 28184237 | Top cover | | | |
| A62 | 838440089 | 4TTB+8C (BC), Tapping screw | | | |
| A63 | 838430088 | 3TTB+8B (BC), Tapping screw | | | |
| A64 | 28140408 | 3x10x36, Cushion | | | |
| A71 | 11388121 | Front panel ass'y | | | |
| A71a | 28125149 | End cap L | | | |
| A71b | 28125150 | End cap R | | | |
| A71c | 27267347 | Guide E | | | |
| A71d | 27267279 | Guide, power | | | |
| A71e | 28191264A | Clear plate | | | |
| A74 | 28321674 | <u>Knob ass'y repeat</u> | | | |
| A72 | 838430068 | 3TTB+6B (BC), Tapping screw | | | |
| A73 | 838430088 | 3TTB+8B (BC), Tapping screw | | | |
| A75 | 28400190 | Cassette lid ass'y | | | |
| A75a | 28400191 | Window | | | |
| A75b | 27262301 | Plate C | | | |
| A75c | 2191265 | Clear plate C | | | |
| A76 | 880009 | Rivert | | | |

NOTE

D : 120V AC,60Hz
G : 220V AC,50Hz
W : 120 or 220V AC,50/60Hz

NOTE: THE COMPONENTS IDENTIFIED BY MARK Δ ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE ONLY WITH PARTS NUMBER SPECIFIED.

ADJUSTMENT PROCEDURES

PRECAUTIONS

- Before adjustment, clean the following parts with an alcohol moistend swab.
 - * record/playback head
 - * erase head
 - * pinch roller
 - * capstan
- Do not use magnetized screwdriver for adjustments.
- Demagnetize record/playback head with a head demagnetizer.

TEST EQUIPMENT/TOOLS REQUIRED:

Audio oscillator
 Digital frequency counter
 Oscilloscope
 Attenuator
 AC voltmeter DC voltmeter voltmeter

Blank tapes (completely erased)

NORMAL.....NEW UD 90
 HIGH.....NEW XL-II 90
 METAL.....NEW MX 60

Test tapes

VTT-658 : 10 kHz, -15 dB
 MTT-111 : 3 kHz, -10 dB
 MTT-150 : Dolby level calibration
 400 Hz tone 200 nWb/m

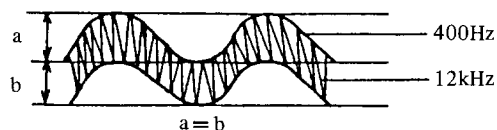
| Item | Connection of instrument | Line input | Test tape | Mode | Output indicator | Adjustment point | Adjust | Remarks |
|-------------------|---|-------------------------------|---------------------------------|-----------|------------------------------|---|---|--|
| 1 Playback torque | | | TW-2111 | PB | TW-2111 | R761 | 35 to 55gcm | |
| 2 Tape speed | Frequency counter to LINE output terminal | | MTT-111 | PB | Frequency counter | Semi-fixed on the moter | 3,000 to 3,010Hz | |
| 3 Head azimuth | AC voltmeter and oscilloscope to LINE output terminal | | VTT-658 | PB | AC voltmeter | Head azimuth screws | Maximum and same phase at channels L and R. | See fig. 1 Set the semi-fixed resistors R123 and R124 to center position. |
| 4 Playback level | AC voltmeter terminals TP-3 and TP-4 | | MTT-150 | PB | AC voltmeter | R125 (Ch. L) R126 (Ch. R) | 580mV | |
| 5 Meter | | | MTT-150 | PB | Level meter | R687 R688 | OdB indicator lights on | |
| 6 Bias current | Fig. 2 | 400Hz, -20dB and 12kHz, -20dB | MAXELL UD-IC90 | REC/PB | AC voltmeter | R599 (Ch. L) R600 (Ch. R) | Same level at REC/PB AND SAME LEVEL AT HX PRO ON/OFF | INPUT VOLUME maximum HX PRO ON NORMAL TAPE |
| | R563 & R564 MUST BE ADJUSTED TO COMPENSATE FOR 5 OR 6 DB INCREASE BETWEEN HX PRO ON & OFF TOGETHER WITH R599/R600 | | | | | R563 R564 | Same level +5 at HXPRO +6 ON/OFF dB | HX PRO OFF NORMAL TAPE |
| | | | HIGH XL-IC90 METAL MXC-60 | | | R597 HIGH R598 R595 METAL R596 | Same level at REC/PB | HXPRO ON HIGH, METAL TAPE |
| 7 Record level | Fig. 2 | 1kHz | | REC PAUSE | AC voltmeter AC voltmeter | Attenuator or AF OSC output R511 R512 | 775mV Same level at source and tape position of MONITOR switch | INPUT VOLUME maximum ACCUBIAS ON/OFF OFF |

ACCUBIAS oscillator adjustment

Connect the oscilloscope and AC voltmeter to the terminal TP-6.
 Set Rec. Cal. switch to on.

Adjust the semi-fixed resistor R27 so that the 400Hz and 12.5kHz mixing signals become same level (a=b) as shown below.

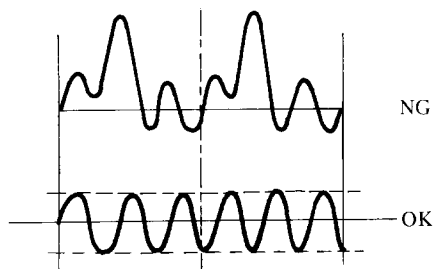
Adjust R29 so that the AC voltmeter indicator becomes 70mV.



DBX Adjustment

* Encoder

Receive a 1kHz signal through LINE and, when the LINE OUT output is 775mV, adjust R419 (Left) and R420 (Right) so that distortion is minimized as shown on a distortion meter connected to the output of TP (Left: J7 Right: J8) of NADBX-2076. At the same time, adjust so that the distortion waveform is as shown below (not more than 0.5%)
Then, lower the input level at TP by 10dB and confirm that the TP output goes down by 5dB (1/2 compression).



* Decoder

Input a 1kHz signal from the P.B. head input (p101) and adjust the input so at TP of NADBX-2075 (Left: J11 Right: J12) the level is between 500mV and 1V (R301 and R302 are centered). Then, as in the encoder section, adjust R319 (Left) and R320 (Right) so that distortion and the waveform are both minimized.
Then, lower the input level at TP by 10dB and confirm that the TP output goes down by 20dB (2X expansion).

* Overall performance

Input a 1kHz signal through LINE IN and, while recording that signal, adjust R301 (Left) and R302 (Right) of NADBX-2075 so that the level is the same for when dbx is in and out.

Operation Checks for Special Circuits

1. HX Pro

Record a 12.5kHz signal and, while playing it back, confirm that the level is raised by the following values when HX Pro is switched on compared with when HX Pro is left off:

Normal tape: 5 -- 6dB

High tape: 5 -- 6dB

Metal tape: 0 -- 1dB

2. dbx

Decode

With dbx out, record 1kHz at 0dBm and -10dBm, rewind the tape and play the tape with dbx in. At this time, the 0dBm should now be +7dBm and the -10dBm should be -13dBm (using normal tape).

Encode

With dbx in, record 1kHz at 0dBm and -10dBm, rewind the tape and play the tape with dbx out. At this time, the 0dBm should now be -3.5dBm and the -10dBm should be about -8.5dBm (using normal tape).

3. Accubias

Confirm that Accubias is set when using a standard tape, then record 15kHz at -20dBm and play it back. If the level when Accubias was set is within ± 1.5 dB of the level when Accubias was reset, the Accubias circuit is functioning properly.

4. Recording Calibration Adjustment Range

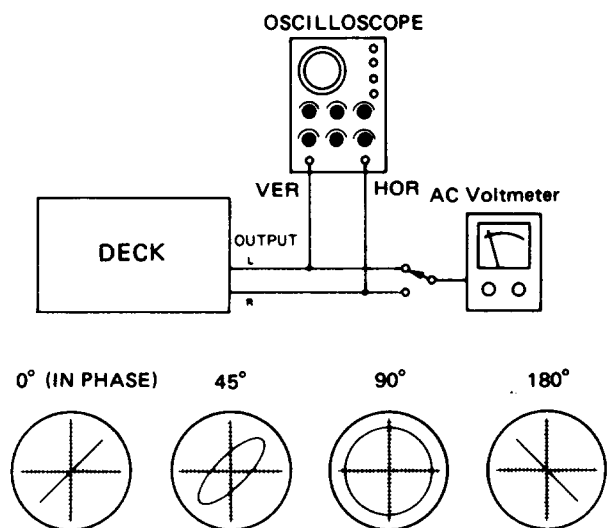
(Master VR Max, Preset Center)

With the recording calibration on and the deck in the source mode, confirm that the meter is reading 0 to +1dB and make a recording. Then confirm that the meters fluctuate between +3dB and -3dB when the calibration VR is rotated back and forth while the recording is played back with the deck in the tape mode.

5. Preset VR Adjustment Range

(Master VR Max, Rec Cal Center)

Using the method described in section four, confirm that the meters fluctuate between +2dB and -2dB when the calibration VR is rotated back and forth.



Confirming phase relationship

fig-1

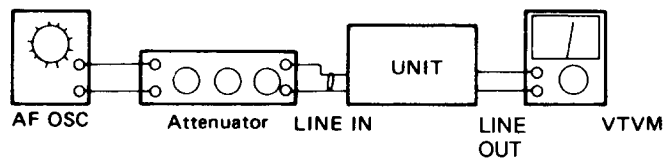
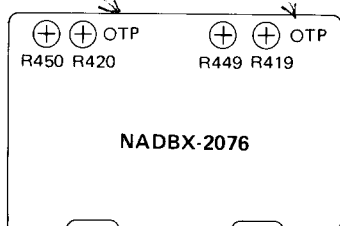
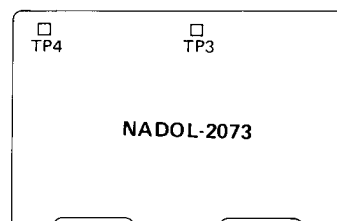
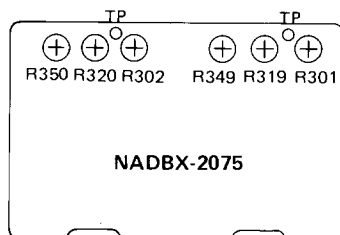
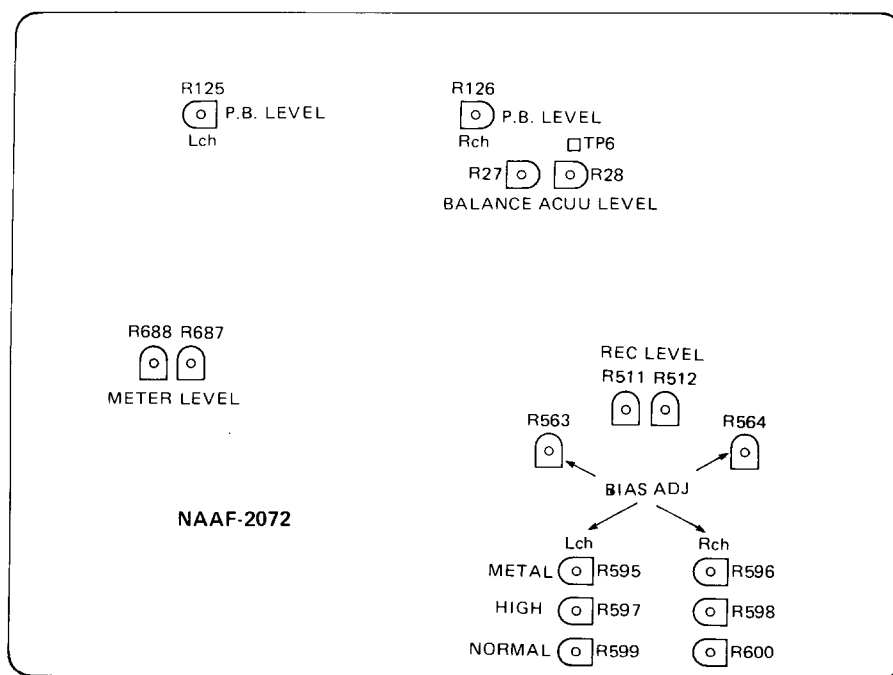
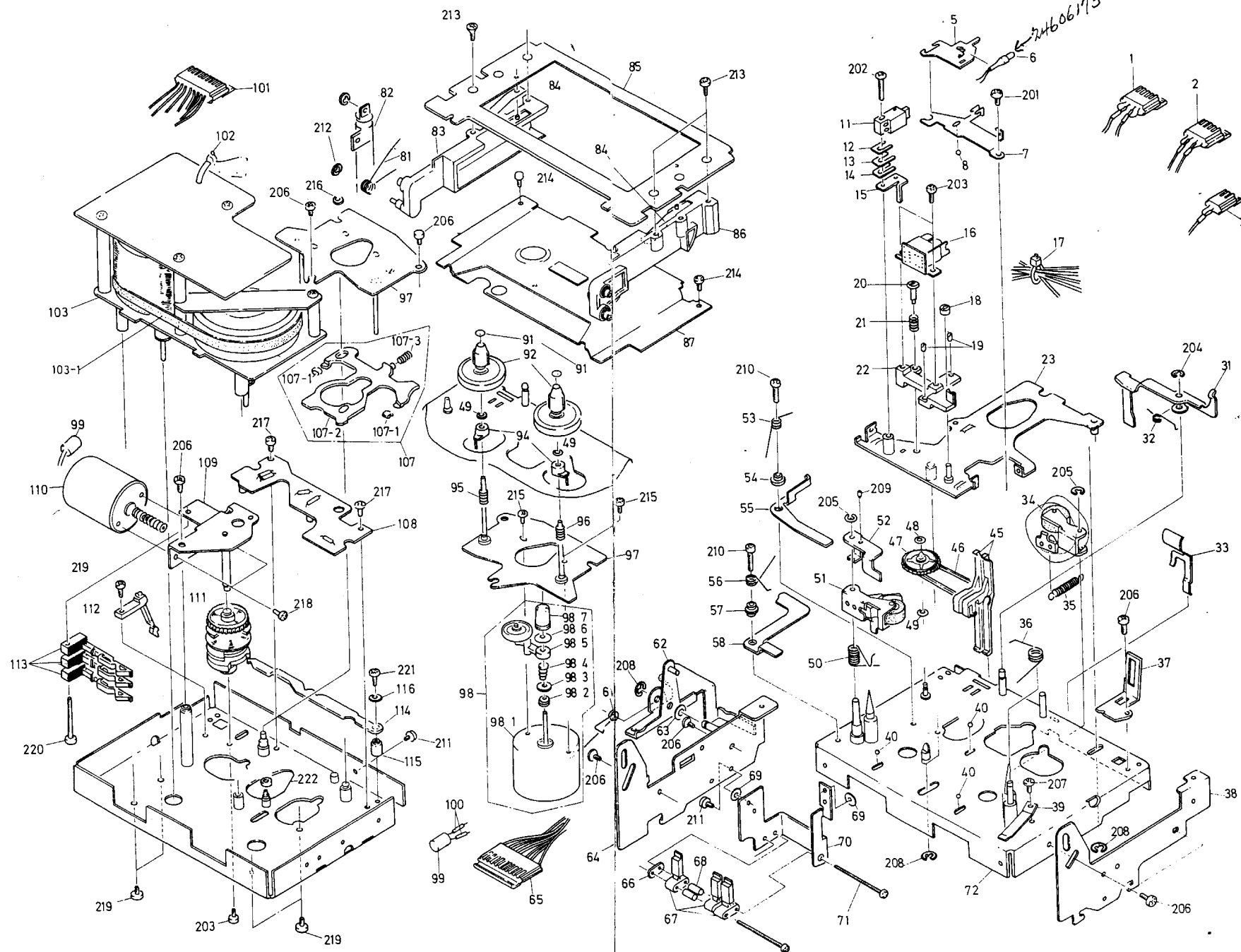


fig-2



TAPE MECHANISM-EXPLODED VIEW



TAPE MECHANISM-PARTS LIST

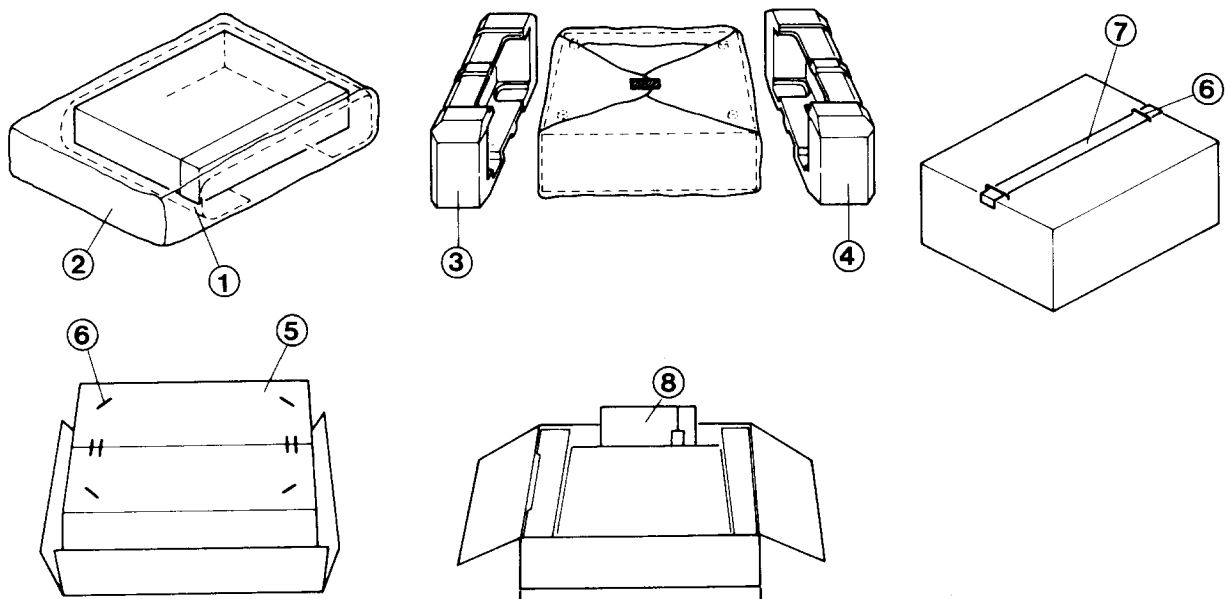
| REF. NO. | PART NO. | DESCRIPTION |
|----------|------------|---------------------------|
| 5 | 24610498 | Holder, lamp |
| 6 | 24606173 | 50mA, 14V, Lamp |
| 7 | 24610669 | Plate, holding, head |
| 8 | 24610943 | 3mm, Steelball |
| 11 | 24600047 | Erase head |
| 12 | 24611060 | t0.06, Spacer |
| 13 | 24611061 | t0.03, Spacer |
| 14 | 24611062 | 0.1t, Spacer |
| 15 | 24610653 | Plate, erase head |
| 16 | 24600030A | Rec/pb head |
| 18 | 24610495 | Adjusting nut |
| 19 | 801251 | 2x4mm, Screw |
| 20 | 24610652 | Shaft |
| 21 | 24605502 | Spring |
| 22 | 24611063 | Head block |
| 23 | 24611064 | Head base ass'y |
| 31 | 24603284 | Lever, reader |
| 32 | 24605506 | Spring |
| 33 | 24605507 | Spring, holding, cassette |
| 34 | 24602270 | Pinch roller ass'y |
| 35 | 24605244 | Spring |
| 36 | 24605508 | Spring |
| 37 | 24610659A | Protector |
| 38 | 24610846 | Bracket R |
| 39 | 24605188 | Spring, cassette |
| 40 | 24610351 | Steelball |
| 45 | 24603205 | Lever, rec. |
| 46 | 24602271 | Belt |
| 47 | 24601167 | Pulley ass'y |
| 48 | 24611003 | 1.8x3.8x0.5mm, Washer |
| 49 | 24611047 | 2.1x4.5x0.1mm, Washer |
| 50 | 24605509 | Spring |
| 51 | 24602272 | Pinch roller ass'y |
| 52 | 24611065 | Lever, adjusting |
| 53 | 24605510 | Spring |
| 54 | 24604065 | Collar |
| 55 | 24603286 | Lever, selector |
| 56 | 24605511 | Spring |
| 57 | 24610344 | Collar |
| 58 | 24611066 | Lock plate |
| 61 | 24605504 | Spring |
| 62 | 24603285 | Lever, cancel |
| 63 | 8771441005 | Washer |
| 64 | 24611067 | Side bracket L |
| 66 | 24611057 | Washer |
| 67 | 24606205 | Leafswitch |
| 68 | 24604063 | Collar |
| 69 | 87712705 | 2.7x5x0.5mm, Washer |
| 70 | 24611068 | Bracket, switch |
| 71 | 82112030 | Pan head screw |
| 72 | 24611069 | Chassis |
| 81 | 24605456 | Spring |
| 82 | 24611051 | Damper unit |
| 83 | 24611070 | Holder L |
| 84 | 24605463 | Spring |

| REF. NO. | PART NO. | DESCRIPTION |
|----------|-----------|---------------------------------------|
| 85 | 24610949 | Frame |
| 86 | 24611071 | Holder R |
| 87 | 24611019 | Panel, cassette |
| 94 | 24611072 | Holder, spring |
| 95 | 24605505 | Spring |
| 96 | 24605501 | Spring |
| 97 | 24611073 | Bracket, motor |
| 98 | 24601171 | Reel motor ass'y |
| 98-1 | 24601169 | Reel motor |
| 98-2 | 24611048 | Holder, spring |
| 98-3 | 24610374 | Washer |
| 98-4 | 246-5512 | Spring |
| 98-5 | 24602274 | Lever, idler |
| 98-6 | 24610970 | Felt |
| 98-7 | 24602273 | Motor pulley |
| 99 | 352942206 | 22μF, 16V, Non-polar elect. capacitor |
| 100 | 24604066 | Tube |
| 102 | 24601152 | Binder |
| 103 | 24601172 | DD motor ass'y |
| 103-1 | 24602275 | Belt |
| 107 | 24611043 | Brake plate ass'y |
| 107-1 | 24610999 | Brake rubber |
| 107-2 | 24611053 | Brake plate |
| 107-3 | 24605472 | Spring |
| 108 | 24606206 | Sensor pc board ass'y |
| 109 | 24611074 | Bracket ass'y |
| 110 | 24601103 | Assist motor |
| 111 | 24602133 | Cam gear |
| 112 | 24606104 | Leafswitch |
| 113 | 24606119 | Leafswitch |
| 114 | 24611075 | Connector plate |
| 115 | 24604064 | Collar |
| 116 | 87712808 | 2.8x8x1mm, Washer |
| 201 | 833130049 | 3x4mm, Pan head screw |
| 202 | 82512012 | 2x12mm, Binding screw |
| 203 | 801250 | 4mm, Pan head screw |
| 204 | 8930251 | E washer |
| 205 | 8930201 | E washer |
| 206 | 833125059 | 2.5x5mm, Tapping screw |
| 207 | 801292 | 2x3.2mm, Tapping screw |
| 208 | 893030 | 3mm, E washer |
| 209 | 801263 | 2x3mm, Screw |
| 210 | 833125069 | 2.5x6mm, Pan head screw |
| 211 | 801325 | 2x5mm, Pan head screw |
| 212 | 891024 | Circlip |
| 213 | 835426082 | 2.6x8mm, Tapping screw |
| 214 | 801326 | 2.5x3.5mm, Pan head screw |
| 215 | 82512603 | 6x3mm, Binding screw |
| 216 | 863720 | N-2BN, Nut |
| 217 | 833125049 | 2.5x4mm, Tapping screw |
| 218 | 801259 | 2x3mm, Screw |
| 219 | 833126067 | 2.6x6mm, Tapping screw |
| 220 | 833125209 | 2.5x20mm, Tapping screw |
| 221 | 833126127 | 2.6TTP+12S, Tapping screw |
| 222 | 863126 | N-2.6F, Nut |

| REF. NO. | PART NO. | DESCRIPTION |
|----------|----------|------------------|
| 91 | 24610349 | Washer |
| 92 | 24602299 | Reel stand ass'y |



PACKING VIEW



D Model

| REF. NO. | PARTS NO. | DESCRIPTION |
|----------|---------------------|---------------------------|
| 1 | 29095012-1 | 500x800, Protection sheet |
| 2 | 290311A | 620x550, Poly bag |
| 3 | 29090922 | Pad (L) |
| 4 | 29090923 | Pad (R) |
| 5 | 29050983 | Master carton box |
| 6 | 282301 | Sealing hook |
| 7 | 260012 | Damplon tape |
| 8 | Accessory bag ass'y | |
| | 29340802 | Instruction manual |
| | 2010095 | Connection cable |
| | 29365006-5 | Warranty card (N) |
| | 29358002A | Service station list (N) |
| | 29100005 | 220x330, Poly bag |

G/W Model

| REF. NO. | PARTS NO. | DESCRIPTION |
|----------|---------------------|----------------------------|
| 1 | 29095012-1 | 500x800, Protection sheet |
| 2 | 290311A | 500x750, Poly bag |
| 3 | 29090922 | Pad (L) |
| 4 | 29090923 | Pad (R) |
| 5 | 29050983 | Master carton box |
| 6 | 282301 | Sealing hook |
| 7 | 260012 | Damplon tape |
| 8 | Accessory bag ass'y | |
| | 29340803 | Instruction manual |
| | 2010095 | Connection cable |
| | 25055040 | Conversion plug CV-K-2 (W) |
| | 29100005 | 220x330, Poly bag |

NOTE

(N): Only U.S.A. Model

(W): Only 120/220V Model

PRINTED CIRCUIT BOARD PARTS LIST

Main circuit pc board (NAAF-2072)

| REF. NO. | PART NO. | DESCRIPTION | REF. NO. | PART NO. | DESCRIPTION |
|------------|---|---|------------|---|---|
| | ICs | | | | |
| Q105 | 222811 or 222502 | NJM4558DD or NJM4558DX | Q907 | 2211683 2201285 or 2201286 | 2SD468 (C) 2SD882 (Q) or 2SD882 (P) |
| Q207, Q209 | 222811 222502 or 222534 | NJM4558DD, NJM4558DX or NJM4559DX | Q908 | 2201275 or 2201276 | 2SB772 (Q) or 2SB772 (P) |
| Q371 | 222736 or 222652 | NJM4558S or M5218L | Q909 | 2211612 or 2211683 | 2SD471 (L) or 2SD468 (C) |
| Q373, Q471 | 222652 | M5218L | | Diodes | |
| Q505, Q506 | 222652 | M5218L | D201, D202 | 223155 | 1SS138 |
| Q521 | 222735 | NJM072D | D301-D304 | 223145, | 1S2076TD, |
| Q523, Q524 | 222681 or | IR3702 or | D520, D619 | 223150, | US1040, |
| Q603, Q620 | 222695 | LA6324 | | 223105 or 223133 | 1S1555 or DS442X |
| Q904 | 222780120 | 7812, Const. voltage, +12V | D401-D404 | 223155 | 1SS138 |
| Q905 | 222790120 | 7912, Const. voltage, -12V | D501-D516 | 223155 | 1SS138 |
| Q906 | 222780050 | 7805, Const. voltage, +5V | D517 | 2239673, | RD15EB3, |
| | Transistors | | D603-D606 | 2243253 or 2242922 | MTZ15C or EQA02-14B |
| Q101-Q104 | 2211406, | 2SC2240 (BL), | D519 | 223155 | 1SS138 |
| Q201, Q202 | 2211896 or 2212256 | 2SC1815L (BL) or 2SC2458 (LL) | D601, D602 | 223155 | 1SS138 |
| Q107, Q108 | 2211255, | 2SC1815 (GR), | D607, D608 | 223155 | 1SS138 |
| Q203, Q204 | 2212115, 2210746 or 2212485 | 2SC2458 (GR), 2SC945A (P) or JC501 (Q) | D611-D614 | 223132 | 1K60 |
| Q205, Q206 | 2212303, 2212304, 2210746 or 2211945 | 2SK381 (C), 2SK381 (D), 2SK246 (Y) or 2SK246 (GR) | D616 | 2239451, 2243141 or 2242836 | RD5.1EB1, MTZ5.1A or EQA-02-05C |
| Q311-Q314 | 2212304, 2212305, 2211945 or 2211946 | 2SK381 (D), 2SK381 (E), 2SK246 (GR) or 2SK246 (BL) | D617, D618 | 223155 | 1SS138 |
| Q377, Q378 | 2211705 or 2211706 | 2SD655 (E) or 2SD655 (F) | D620 | 223155 | 1SS138 |
| Q381, Q382 | 2211255, | 2SC1815 (GR), | D621 | 223145, 223150, | 1S2076TD, US1040, |
| Q507-Q518 | 2212115, | 2SC2458 (GR), | | 223105 or 223133 | 1S1555 or DS442X |
| Q527-Q532 | 2210746 or | 2SC945A (P) or | D622, D623 | 223155 | 1SS138 |
| Q601, Q602 | 2212485 | JC501 (Q) | D624 | 2239513, 2243173 | RD6.8EB3, MTZ6.8C or |
| Q411-Q414 | 2212304, | 2SK381 (D), | | 2242855 | EQA02-07B |
| Q501-Q504 | 2212305, 2211945 or 2211946 | 2SK381 (E), 2SK246 (GR) or 2SK246 (BL) | D901, D902 | 223868 | 2W02 |
| Q519, Q520 | 2211255 | 2SC1815 (GR) | D903, D904 | 223848 | GP-08B |
| Q533 | 2211554 | 2SA562TM (Y) | D905 | 223842 | GP-15B |
| Q534, Q623 | 2211454, | 2SA1015 (Y), | D906 | 2239653, 2243243 or 2242911 | RD13EB3, MTZ13C or EQA02-18B |
| Q605, Q606 | 2212124, 2210804 or 2212494 | 2SA1048 (Y), 2SA733A (Q) or JA101 (P) | D907 | 2239794, 2239811, 2243021 or 2243022 | RD27EB4, RD30EB1, EQA02-28A or EQA02-28B |
| Q535, Q537 | 2211254, | 2SC1815 (Y), | D908 | 2239732, 2243282 or 2242962 | RD20EB2, MTZ20B or EQA02-18B |
| Q538, Q607 | 2212114, | 2SC2458 (Y), | D910, D911 | 2239551, 2243191 or 2242865 | RD8.2EB1, MTZ8.2A or EQA02-08B |
| Q624 | 2210747 or 2212484 | 2SC945A (Q) or JC501 (P) | D912, D913 | 223155 | 1SS138 |
| Q536 | 2211683 or 2211612 | 2SD468 (C) or 2SD471 (L) | D914 | 2239673, 2243253 or 2242922 | RD15EB3, MTZ15C or EQA02-14B |
| Q608, Q617 | 2211255, | 2SC1815 (GR), | | Coils | |
| Q610-Q613 | 2212115, | 2SC2458 (GR), | L501, L502 | 231041 or 24606070 | NCH-2081 or NCH-1008 |
| Q619, Q621 | 2210746 or | 2SC945A (P) or | L503, L504 | 231038 or 24606080 | NCH-2078 or NCH-1022 |
| Q622, Q625 | 2212485 | JC501 (Q) | L505, L506 | 231057 | NCH-4102 |
| Q609, Q614 | 2211455, | 2SA1015 (GR), | L507, L508 | 233329 | NCH-6101 |
| Q615, Q616 | 2212125, | 2SA1048 (GR), | L509, L510 | 231058 | NCH-4103 |
| Q618, | 2210803 or 2212495 | 2SA733A (P) or JA101 (Q) | L511, L512 | 231025 | NCH-1064 |
| Q901 | 2201340 or 2201350 | 2SD1128 or 2SD687 | | Osc. block | |
| Q902, Q903 | 2211612 or | 2SD471 (L) or | | | |

| REF. NO. | PART NO. | DESCRIPTION |
|---------------|--------------------|---------------------------------------|
| Z001 | 24606199 | NOB-030 |
| | Capacitors | |
| C103, C104 | 392880337 | 3.3 μ F, 50V, LL |
| C109-C112 | 352741009 | 10 μ F, 16V, Elect. |
| C201, C202 | 392880107 | 1 μ F, 50V, LL |
| C203, C204 | 352780109 | 1 μ F, 50V, Elect. |
| C211, C212 | 392883397 | 0.33 μ F, 50V, LL |
| C213, C214 | 352783399 | 0.33 μ F, 50V, Elect. |
| C371-C374 | 352750479 | 4.7 μ F, 25V, Elect. |
| C471, C472 | 352744709 | 47 μ F, 16V, Elect. |
| C501, C502 | 352750479 | 4.7 μ F, 25V, Elect. |
| C503, C504 | 352783399 | 0.33 μ F, 50V, Elect. |
| C521, C522 | 352780479 | 4.7 μ F, 50V, Elect. |
| C539 | 352722219 | 220 μ F, 6.3V, Elect. |
| C540 | 352751019 | 100 μ F, 25V, Elect. |
| C543 | 352780479 | 4.7 μ F, 50V, Elect. |
| C605 | 352782299 | 2.2 μ F, 50V, Elect. |
| C609, C610 | 352780109 | 1 μ F, 50V, Elect. |
| C611, C613 | 352750479 | 4.7 μ F, 25V, Elect. |
| C612 | 352780109 | 1 μ F, 50V, Elect. |
| C615 | 352741009 | 10 μ F, 16V, Elect. |
| C620 | 352750479 | 4.7 μ F, 25V, Elect. |
| C621 | 352780109 | 1 μ F, 50V, Elect. |
| C622 | 352750479 | 4.7 μ F, 25V, Elect. |
| C623 | 352751009 | 10 μ F, 25V, Elect. |
| C631 | 352784799 | 0.47 μ F, 50V, Elect. |
| C632 | 352750479 | 4.7 μ F, 25V, Elect. |
| C633 | 352741009 | 10 μ F, 16V, Elect. |
| C634 | 352732209 | 22 μ F, 10V, Elect. |
| C640 | 352741009 | 10 μ F, 16V, Elect. |
| C641 | 352742209 | 22 μ F, 16V, Elect. |
| C644, C646 | 352750479 | 4.7 μ F, 25V, Elect. |
| C645 | 352741009 | 10 μ F, 16V, Elect. |
| C905 | 352752229 | 2,200 μ F, 25V, Elect. |
| C906, C907 | 352784719 | 470 μ F, 50V, Elect. |
| C908 | 352742219 | 220 μ F, 16V, Elect. |
| C909 | 352741019 | 100 μ F, 16V, Elect. |
| C910 | 352764709 | 47 μ F, 35V, Elect. |
| C911 | 352751009 | 10 μ F, 25V, Elect. |
| C913, C914 | 352752229 | 2,200 μ F, 25V, Elect. |
| C915 | 352783399 | 0.33 μ F, 50V, Elect. |
| C916 | 352780229 | 2.2 μ F, 50V, Elect. |
| C917 | 352781099 | 0.1 μ F, 50V, Elect. |
| C918 | 352780109 | 1 μ F, 50V, Elect. |
| C919 | 3504168 | 13,000 μ F, 25V, Elect. |
| C920 | 352783399 | 0.33 μ F, 50V, Elect. |
| C921 | 352781099 | 0.1 μ F, 50V, Elect. |
| C922, C923 | 352731019 | 100 μ F, 10V, Elect. |
| C924, C925 | 352734709 | 47 μ F, 16V, Elect. |
| C926 | 352741009 | 100 μ F, 16V, Elect. |
| C951, C952 | 352731019 | 100 μ F, 10V, Elect. |
| C953-C955 | 352744709 | 47 μ F, 16V, Elect. |
| C970 | 352741009 | 10 μ F, 16V, Elect. |
| C14 | 352750479 | 4.7 μ F, 25V, Elect. |
| C15, C19, C20 | 352741009 | 10 μ F, 16V, Elect. |
| C21 | 352780229 | 2.2 μ F, 50V, Elect. |
| | Resistors | |
| R123-R126 | 5215022 or 5215003 | N08HR20KBC, Semi-fixed |
| R219, R220 | 5104148 | N12RL10KB25, Variable, preset level |
| R381, R382 | 5104149 | N12RGL10KB25M, Variable, output level |
| R511, R512 | 5225019 | N10HR4.7KBD, Semi-fixed |
| R563, R564 | 5225078 | N10HR47KBDM, Semi-fixed |
| R585, R586 | 442524704 | 47 Ω , 1/2W, Metal oxide film |
| R595-R600 | 5225078 | N10HR47KBDM, Semi-fixed |
| R687, R688 | 5225015 | N10HR10KBD, Semi-fixed |

| REF. NO. | PART NO. | DESCRIPTION |
|------------|------------|--|
| R901 | 441522294 | 0.22 Ω , 1/2W, Metal oxide film |
| R903 | 442523304 | 33 Ω , 1/2W, Metal oxide film |
| R906, R907 | 441520104 | 1 Ω , 1/2W, Metal oxide film |
| R908 | 441721804 | 18 Ω , 2W, Metal oxide film |
| R916 | 441621514 | 150 Ω , 1W, Metal oxide film |
| R27 | 5225016 | N10HR100KBD, Semi-fixed |
| R28 | 5225034 | N10HR47KBD, Semi-fixed |
| R49 | 442525604 | 56 Ω , 1/2W, Metal oxide film |
| | Plugs | |
| P101, P501 | 25055045 | NPLG-4P-33 |
| P103, P104 | 25055051 | NPLG-8P-39 |
| P105, P106 | 25055065 | NPLG-5P-51 |
| P205, P206 | 25055051 | NPLG-8P-39 |
| P207, P208 | 25055065 | NPLG-5P-51 |
| P502 | 25055038 | NPLG-2P-29 |
| P720 | 25055137 | NPLG-7P-121 |
| P721, P722 | 25055133 | NPLG-3P-117 |
| | Terminals | |
| P202 | 25045142 | NPJ-4PDBL55, Input/output |
| P203 | 25045158 | HLJ-4336-3020, Mic. |
| P201 | 25050064 | NSCT-5P-18, DIN |
| | Switches | |
| S205 | 25065242 | NSS-22104, Mic./Line |
| S101 | 25035434 | NPS-162-242-122-L398, Push |
| S601 | 25030248 | NRS-144-255BU, NR selector |
| | Sockets | |
| J3 | 2000329 | NSAS-12P-288 |
| J6, J7 | 2000330 | NSAS-6P-289 |
| P603 | 2000341A | NSAS-14P-300 |
| P709a | 2000342A | NSAS-6P-301 |
| P707a | 2000332 | NSAS-6P-291 |
| P708a | 2000334 | NSAS-4P-293 |
| P706a | 2000333 | NSAS-6P-292 |
| P505a | 2000343A | NSAS-6P-302 |
| P506a | 2000306A | NSAS-6P-265 |
| | Radiators | |
| | 27160075A | |
| | 27160156 | |
| | 27160011A | |
| | Spacers | |
| | 223019 | AC-229, Transistor |
| | Bushes | |
| | 223017 | AC-310 |
| | Bracket | |
| | 27140915 | Volume |
| | Connectors | |
| | 28320135 | For push switch |

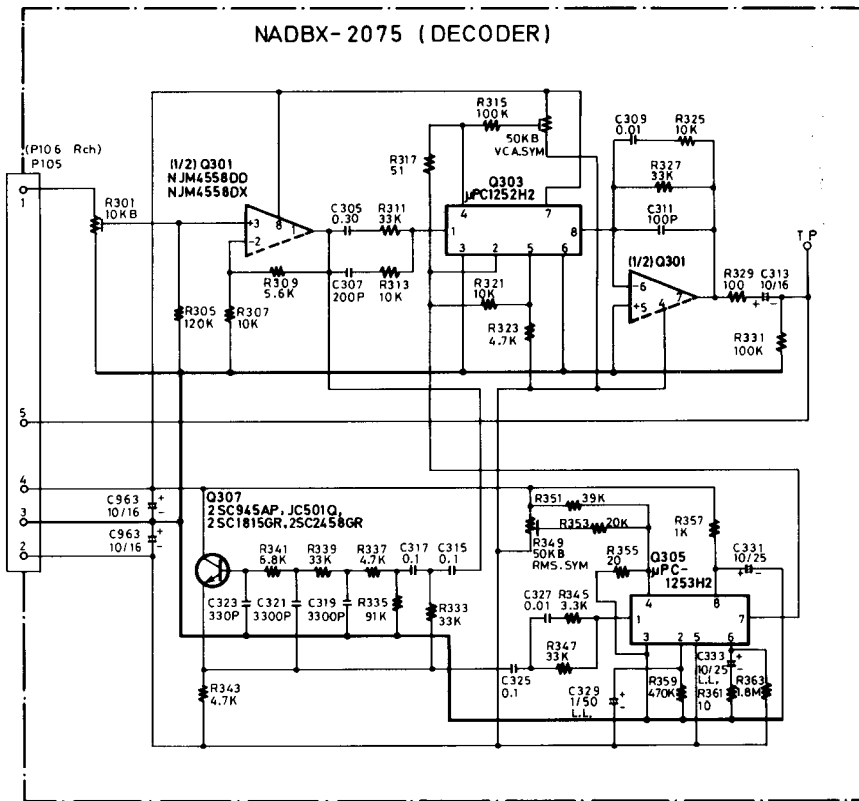
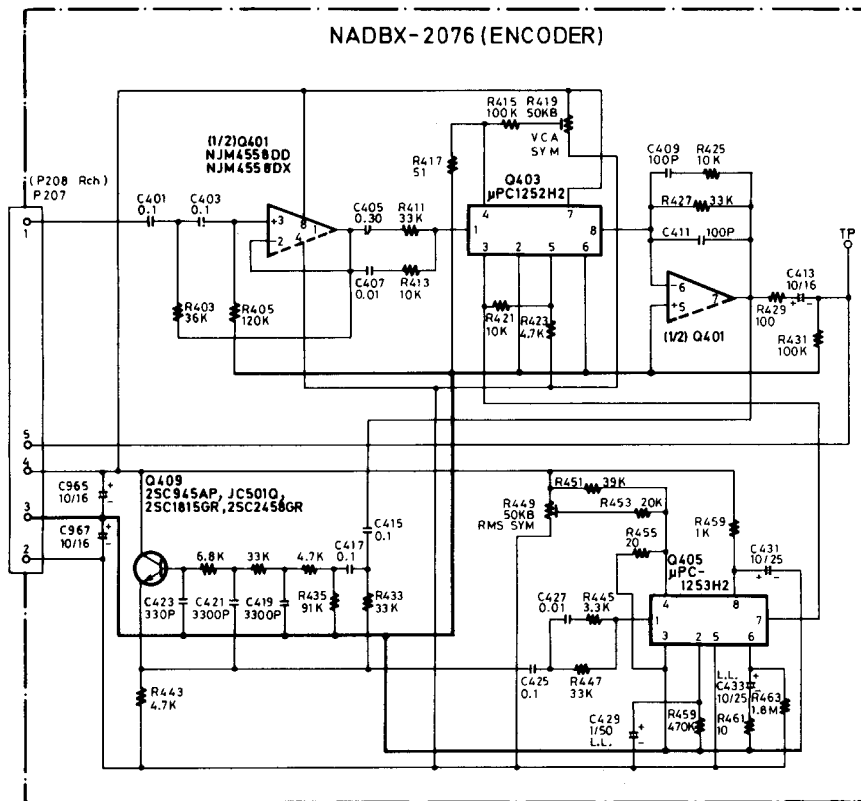
Dolby decoder circuit (NADOL-2073)

| REF. NO. | PART NO. | DESCRIPTION |
|------------|--------------------------|---------------------------------------|
| | ICs | |
| Q111, Q112 | 222813, 222814 or 222815 | HA12058NT-01 (Violet), (Green), (Red) |

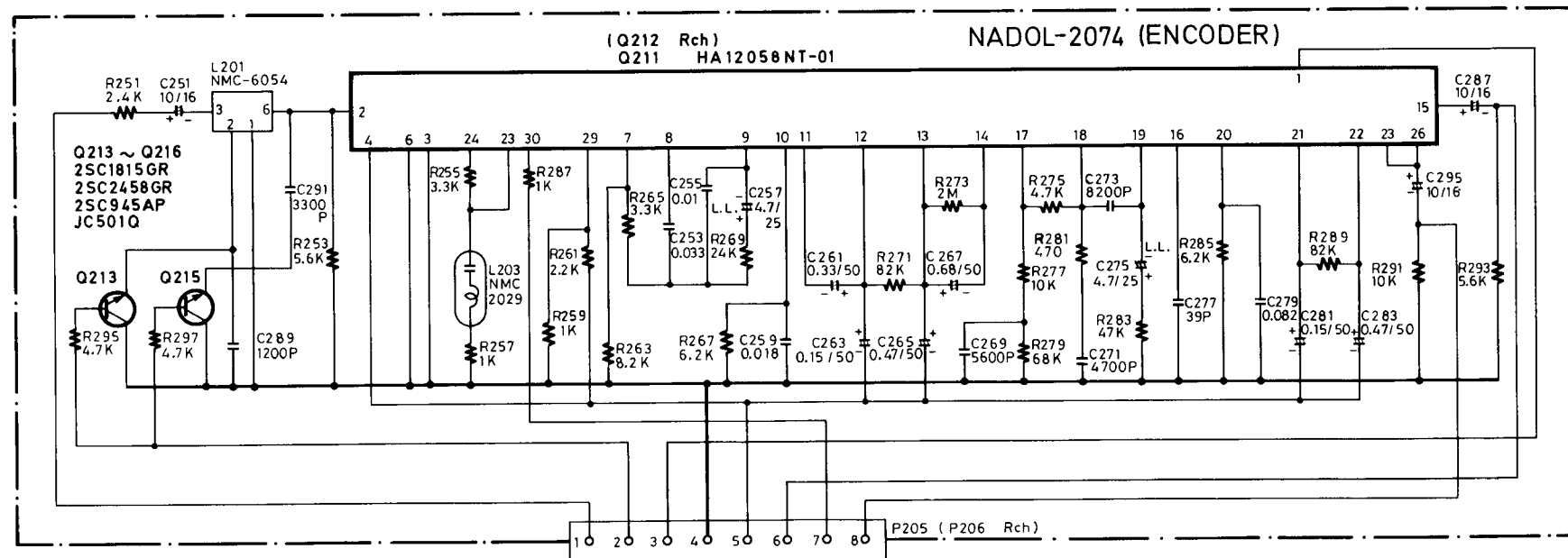
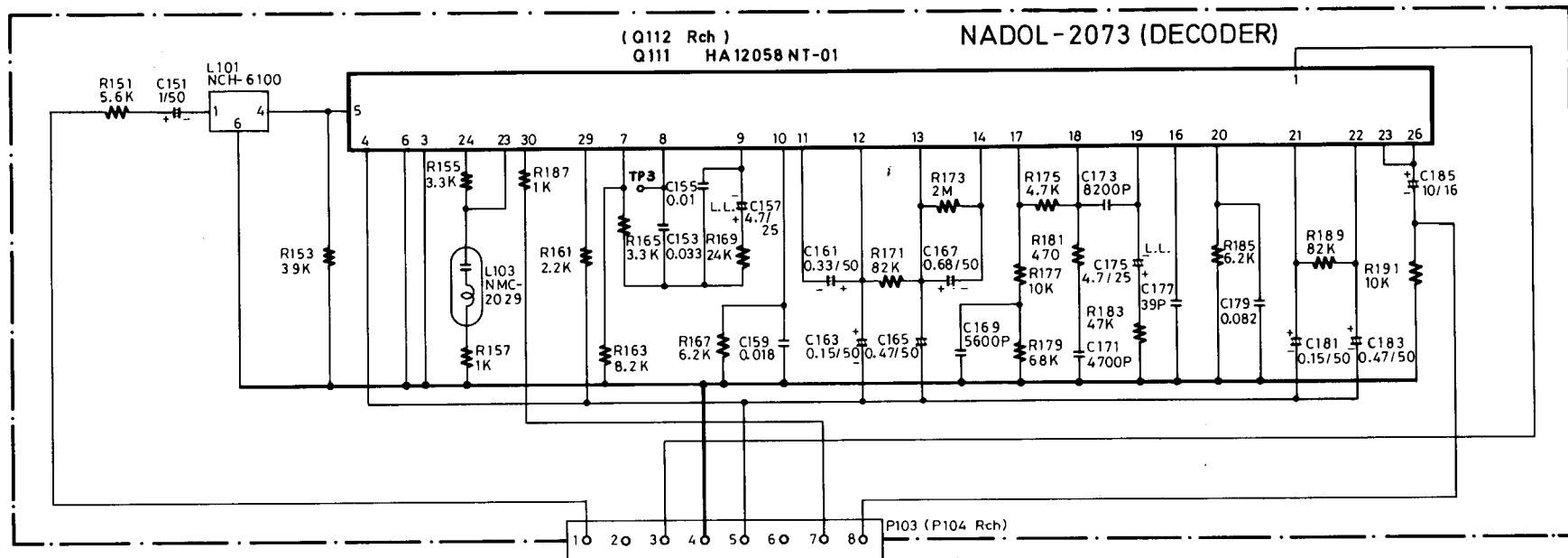
Note: When replace IC HA12058NT-01, use the same color IC for decoder and encoder.

| | | |
|------------|------------|---------------------------|
| | Coils | |
| L101, L102 | 233327 | NCH-6100 |
| L103, L104 | 233245 | NMC-2029 |
| | Capacitors | |
| C151, C152 | 352780109 | 1 μ F, 50V, Elect. |
| C157, C158 | 392850477 | 4.7 μ F, 25V, LL |
| C161, C162 | 352783399 | 0.33 μ F, 50V, Elect. |
| C163, C164 | 352781599 | 0.15 μ F, 50V, Elect. |
| C165, C166 | 352784799 | 0.47 μ F, 50V, Elect. |
| C167, C168 | 352786899 | 0.68 μ F, 50V, Elect. |

SCHEMATIC DIAGRAM-DBX SECTION



SCHEMATIC DIAGRAM-DOLBY SECTION



| | | |
|--------------|-----------|---------------------------|
| C175, C176 | 392850477 | 4.7 μ F, 25V, LL |
| C181, C182 | 352781599 | 0.15 μ F, 50V, Elect. |
| C183, C184 | 352784799 | 0.47 μ F, 50V, Elect. |
| C185, C186 | 352741009 | 10 μ F, 16V, Elect. |
| | Sockets | |
| P103A, P104A | 25050133 | NSCT-8P-35 |
| | Bracket | |
| | 27140916 | Pc board |
| | Screws | |
| | 82143006 | 3P+6FN (BC), Pan head |

Dolby encoder pc board (NADOL-2074)

| REF. NO. | PART NO. | DESCRIPTION |
|--|---|---|
| | ICs | |
| Q111, Q112 | 222813, 222814 or 222815 | HA12058NT-01 (Violet), (Green) (Red) |
| Note: When replace IC HA12058NT-01, use the same color IC for decoder and encoder. | | |
| | Transistors | |
| Q213-Q216 | 2211255, 2212115, 2210746 or 2212485 | 2SC1815 (GR), 2SC2458 (GR), 2SC945A (P) or JC501 (Q) |
| | Coils | |
| L201, L202 | 233328 | NMC-6051 |
| L203, L204 | 233245 | NMC-2029 |
| | Capacitors | |
| C251, C252 | 352741009 | 10 μ F, 16V, Elect. |
| C257, C258 | 392850477 | 4.7 μ F, 25V, LL |
| C261, C262 | 352783399 | 0.33 μ F, 50V, Elect. |
| C263, C264 | 352781599 | 0.15 μ F, 50V, Elect. |
| C265, C266 | 352784799 | 0.47 μ F, 50V, Elect. |
| C267, C268 | 352786899 | 0.68 μ F, 50V, Elect. |
| C275, C276 | 392850477 | 4.7 μ F, 25V, LL |
| C281, C282 | 352781599 | 0.15 μ F, 50V, Elect. |
| C283, C284 | 352784799 | 0.47 μ F, 50V, Elect. |
| C285-C288 | 352741009 | 10 μ F, 16V, Elect. |
| | Sockets | |
| P205A, P206A | 25050133 | NSCT-8P35 |
| | Bracket | |
| | 27140916 | Pc board |
| | Screws | |
| | 82143006 | 3P+6FN (BC), Pan head |

Dbx decoder circuit pc board (NADBX-2075)

| REF. NO. | PART NO. | DESCRIPTION |
|------------|---|---|
| | ICs | |
| Q301, Q302 | 222811 or 222502 | NJM4558DD or NJM4558DX |
| Q303, Q304 | 222805 | μ PC-1252H2 |
| Q305, Q306 | 222806 | μ PC-1253H2 |
| | Transistors | |
| Q307, Q308 | 2211255, 2212115, 2210746 or 2212485 | 2SC1815 (GR), 2SC2458 (GR), 2SC945A (P) or JC501 (Q) |
| | Capacitors | |
| C313, C314 | 352751009 | 10 μ F, 25V, Elect. |
| C329, C330 | 392880107 | 1 μ F, 50V, LL |
| C331, C332 | 352751009 | 10 μ F, 25V, Elect. |
| C333, C334 | 392851005 | 10 μ F, 25V, LL |
| C961-C964 | 352741009 | 10 μ F, 16V, Elect. |
| | Resistors | |
| R301, R302 | 5215010 or 5215033 | N08HR10KBA, Semi-fixed |
| R319, R320 | 5215012 or | N08HR50KBA, |

| | | |
|--------------|----------|------------|
| R349, R350 | 5215035 | Semi-fixed |
| | Sockets | |
| P105A, P106A | 25050130 | NSCT-5P32 |

Dbx encoder circuit pc board (NADBX-2076)

| REF. NO. | PART NO. | DESCRIPTION |
|--------------|---|---|
| | ICs | |
| Q401, Q402 | 222811 or 222502 | NJM4558DD or NJM4558DX |
| Q403, Q404 | 222805 | μ PC-1252H2 |
| Q405, Q406 | 222806 | μ PC-1253H2 |
| | Transistors | |
| Q407, Q408 | 2211255, 2212115, 2210746 or 2212485 | 2SC1815 (GR), 2SC2458 (GR), 2SC945A (P) or JC501 (Q) |
| | Capacitors | |
| C413, C414 | 352751009 | 10 μ F, 25V, Elect. |
| C429, C430 | 392880107 | 1 μ F, 50V, LL |
| C431, C432 | 352751009 | 10 μ F, 25V, Elect. |
| C433, C434 | 392851005 | 10 μ F, 25V, LL |
| C965-V968 | 352741009 | 10 μ F, 16V, Elect. |
| | Resistors | |
| R419, R420 | 5215012 or | N08HR50KBA, |
| R449, R450 | 5215035 | Semi-fixed |
| | Sockets | |
| P207A, P208A | 25050130 | NSCT-5P32 |

Control circuit pc board (NACOC-2077)

| REF. NO. | PART NO. | DESCRIPTION |
|------------|---|---|
| | ICs | |
| Q701 | 222777 | LM6402H-425 |
| Q702 | 222776 | LM6402H-424 |
| Q703 | 222810 | LC7800 |
| Q704 | 222639 | LB1275 |
| Q705 | 222840241 | 4024BP |
| Q706 | 222840692 | 4069BP |
| | Transistors | |
| Q707-Q709 | 2211455, 2212125, 2210803 or 2212945 | 2SA1015 (GR), 2SA1048 (GR), 2SA733A (P) or JA101 (Q) |
| Q710, Q711 | 2211255, 2212115, | 2SC1815 (GR), 2SC2458 (GR), |
| Q714 | 2210746 or | 2SC945A (P) or |
| Q744-Q746 | 2212485 | JC501 (Q) |
| Q712 | 2211454, | 2SA1015 (Y), |
| Q727-Q734 | 2212124, | 2SA1048 (Y), |
| Q740-Q743 | 2210804 or 2212494 | 2SA733A (Q) or JA101 (P) |
| Q713, Q716 | 2201060, | 2SD549, |
| Q717 | 2201291 or 2201292 | 2SD985 (K) or 2SD985 (L) |
| Q715 | 2201350 or 2201340 | 2SD687 or 2SD1128 |
| Q718, Q719 | 2211554 | 2SA562TM (Y) |
| Q720 | 2201074 or 2201385 | 2SD880 (Y) or 2SD330 (E) |
| Q721, Q722 | 2211254, 2212114, | 2SC1815 (Y), 2SC2458 (Y), |
| | 2210747 or 2212484 | 2SC945A (Q) or JC501 (P) |
| Q723, Q724 | 2211683 or 2211612 | 2SD468 (C) or 2SD471 (L) |
| Q725, Q726 | 2211563 | 2SB562 (C) |
| Q735-Q738 | 2211706 | 2SD655 (F) |
| Q739 | 2211544 | 2SC1959 (Y) |

PRINTED CIRCUIT BOARD PARTS LIST

| REF. NO. | PART NO. | DESCRIPTION |
|------------|-----------------------------------|--------------------------------------|
| | Diodes | |
| D701 | 223155 | 1SS138 |
| D705 | 2239552, 2243192 or 2242866 | RD8.2EB2, MTZ8.2B or EQA02-08C |
| D706 | 223145 or 223150 | 1S2076TD or US1040 |
| | X'tal | |
| X701 | 3010069 | CSB800A |
| | Capacitors | |
| C701 | 352750479 | 4.7 μ F, 25V, Elect. |
| C702-C704 | 352780109 | 1 μ F, 50V, Elect. |
| C705 | 352784799 | 0.47 μ F, 50V, Elect. |
| C706 | 352741009 | 10 μ F, 16V, Elect. |
| C712 | 352732209 | 22 μ F, 16V, Elect. |
| C715 | 352734709 | 47 μ F, 10V, Elect. |
| C718 | 352781599 | 0.15 μ F, 50V, Elect. |
| | Resistors | |
| R701-R711 | 49163392411 | 3.9k Ω 11, 1/10W, Network |
| R713-R716 | 49163392404 | 3.9k Ω 4, 1/10W, Network |
| R726-R731 | 49163392406 | 3.9k Ω 6, 1/10W, Network |
| R732-R742 | 49163392411 | 3.9k Ω 11, 1/10W, Network |
| R743-R746 | 49163392404 | 3.9k Ω 4, 1/10W, Network |
| R761 | 5215045 or 5215021 | N08HR10KBC, Semi-fixed |
| R763 | 441722204 | 22 Ω 2W, Metal oxide film |
| R785-R796 | 49163392412 | 3.9k Ω 12, 1/10W, Network |
| R814-R817 | 49163392404 | 3.9k Ω 4, 1/10W, Network |
| R832 | 4000102 | TD5-410D, Thermistor |
| | Plugs | |
| P702 | 25055046 | NPLG-10P-34 |
| P703 | 25055067 | NPLG-9P-53 |
| P704 | 25055154 | NPLG-10P-138 |
| P705 | 25055148 | NPLG-4P-132 |
| P706, P707 | 25055147 | NPLG-3P-131 |
| P708 | 25055146 | NPLG-2P-130 |
| P709 | 25055100 | NPLG-3P-84 |
| | Socket | |
| | 25055151 | NSAS-7P-135 |

Display circuit pc board (NADIS-2078)

| REF. NO. | PART NO. | DESCRIPTION |
|------------|-----------|----------------------|
| | LEDs | |
| D631-D633 | 225137 | SEL-2413E |
| D634 | 225142 | SEL-2913K |
| D635, D636 | 225137 | SEL-2413E |
| D637 | 225142 | SEL-2913K |
| D638, D639 | 225137 | SEL-2413E |
| D640 | 225142 | SEL-2913K |
| D641, D642 | 225137 | SEL-2413E |
| D706 | 225142 | SEL-2913K |
| D707-D709 | 225137 | SEL-2413E |
| D710 | 225142 | SEL-2913K |
| D711 | 225137 | SEL-2413E |
| D712-D714 | 225142 | SEL-2913K |
| D718-D724 | 225137 | SEL-2413E |
| D725 | 225142 | SEL-2913K |
| | Sockets | |
| P720a | 2000335 | NSAS-7P-294 |
| P721a | 2000344 | NSAS-3P-303 |
| P722a | 2000339 | NSAS-3P-298 |
| | Holder | |
| | 27190294A | LED |
| | Screws | |
| | 834430068 | 3TS+6B (BC), Tapping |

Switch pc board (NASW-2079)

| REF. NO. | PART NO. | DESCRIPTION |
|-----------|----------|---------------------------|
| S710-S715 | 25035389 | NPS-111-S353, Push switch |
| P710a | 2000354 | NSAS-14P-312, Socket |

Counter indicator pc board (NADIS-2080)

| REF. NO. | PART NO. | DESCRIPTION |
|----------|----------|-----------------|
| D726 | 225094 | SL-2405-20, LED |

Remote control terminal pc board (NARM-2081)

| REF. NO. | PART NO. | DESCRIPTION |
|----------|----------|------------------------|
| P701 | 25050070 | NSCT-7P20, Socket, DIN |

Switch pc board (NASW-2082)

| REF. NO. | PART NO. | DESCRIPTION |
|-----------|----------|--------------|
| S716-S718 | 25035389 | NPS-111-S353 |

Timer switch pc board (NASW-2083)

| REF. NO. | PART NO. | DESCRIPTION |
|-----------|----------|-------------|
| D702-D704 | 223155 | 1SS138 |
| S720 | 25065170 | NSS-2377 |

Power switch pc board (NASW-2084)

| REF. NO. | PART NO. | DESCRIPTION |
|----------|----------|-----------------------------------|
| C901 | 3500065A | 0.01 μ F, 400V, AC, Capacitor |
| | | IS |
| C901a | 27300601 | SB-1925, Cover |
| S901 | 25035375 | NPS-111-L339P, Power switch |
| | 27140823 | Bracket, switch |
| | 28320135 | Connector, power switch |
| | 82143006 | 3P+6FN (BC), Pan head screw |

Edge light pc board (NAPL-2085)

| REF. NO. | PART NO. | DESCRIPTION |
|----------|----------|------------------|
| PL701 | 210090 | PL14V150mA, Lamp |

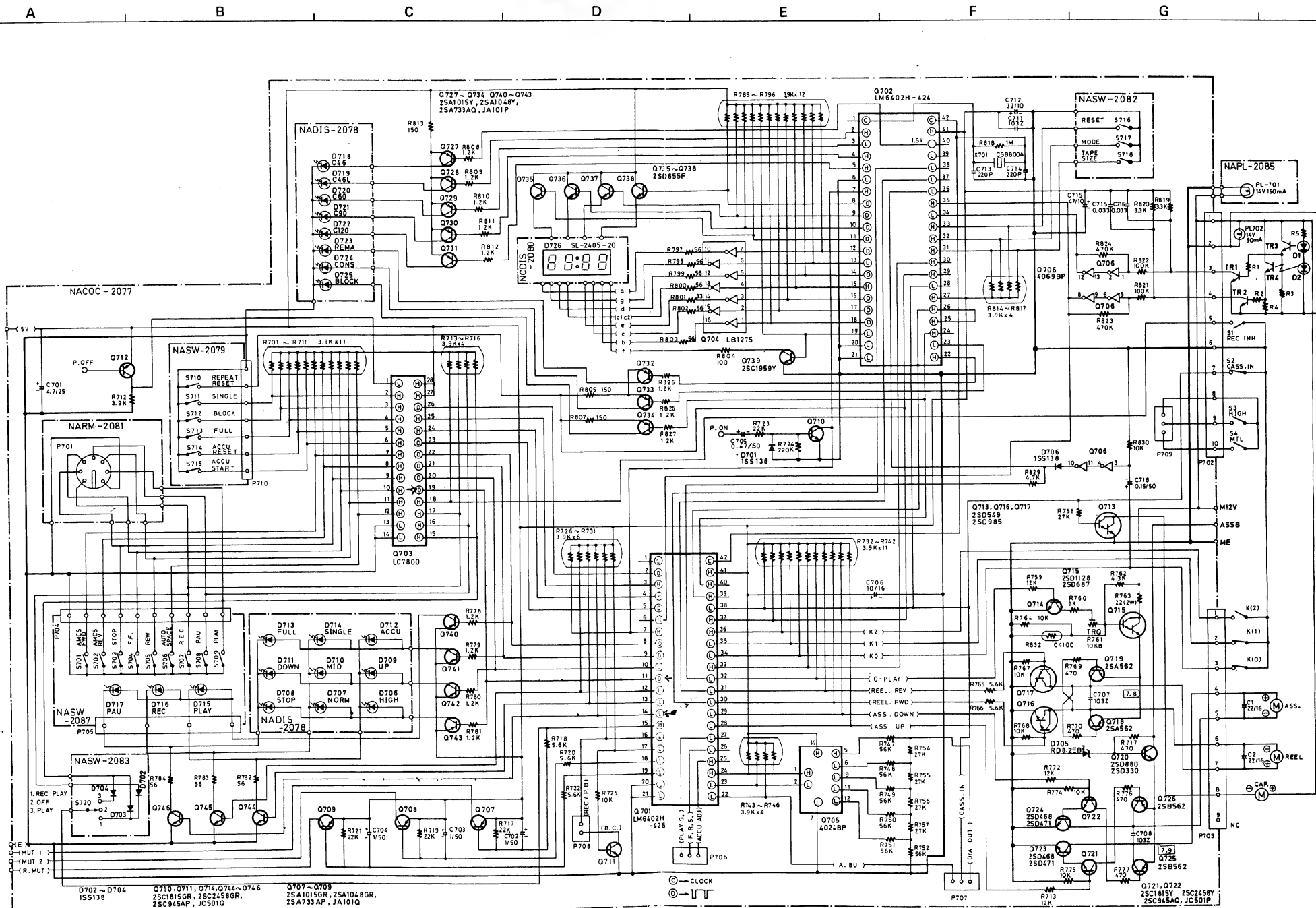
Record calibration volume pc board (NAVR-2086)

| REF. NO. | PART NO. | DESCRIPTION |
|------------|----------|--------------------|
| R507, R508 | 5104159 | N09RLC10KB25M |
| | | Resistor, variable |
| P505, P506 | 25055100 | NPLG-3P-84, Plug |

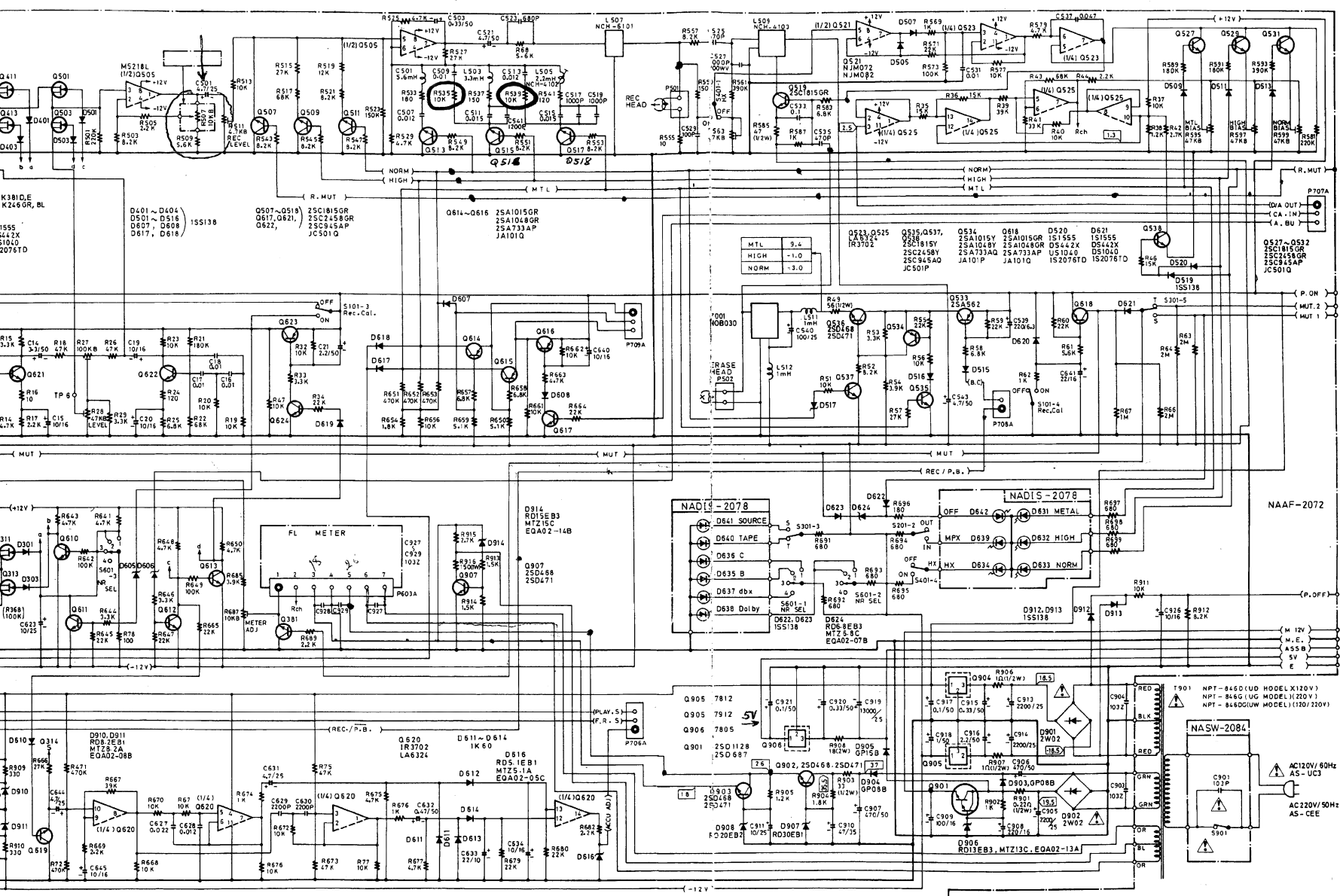
Switch pc board (NASW-2087)

| REF. NO. | PART NO. | DESCRIPTION |
|------------|----------|---------------------------|
| D715 | 225134 | GL-3NG1, LED |
| D716, D717 | 225126 | GL-3PR1, LED |
| S701-S709 | 25035408 | NPS-111-S372, Push switch |
| P704a | 2000323 | NSAS-10P-282, Socket |
| P705a | 2000324 | NSAS-4P-283, Socket |
| | 27270103 | Spacer, LED |

SCHEMATIC DIAGRAM-CONTROL SECTION

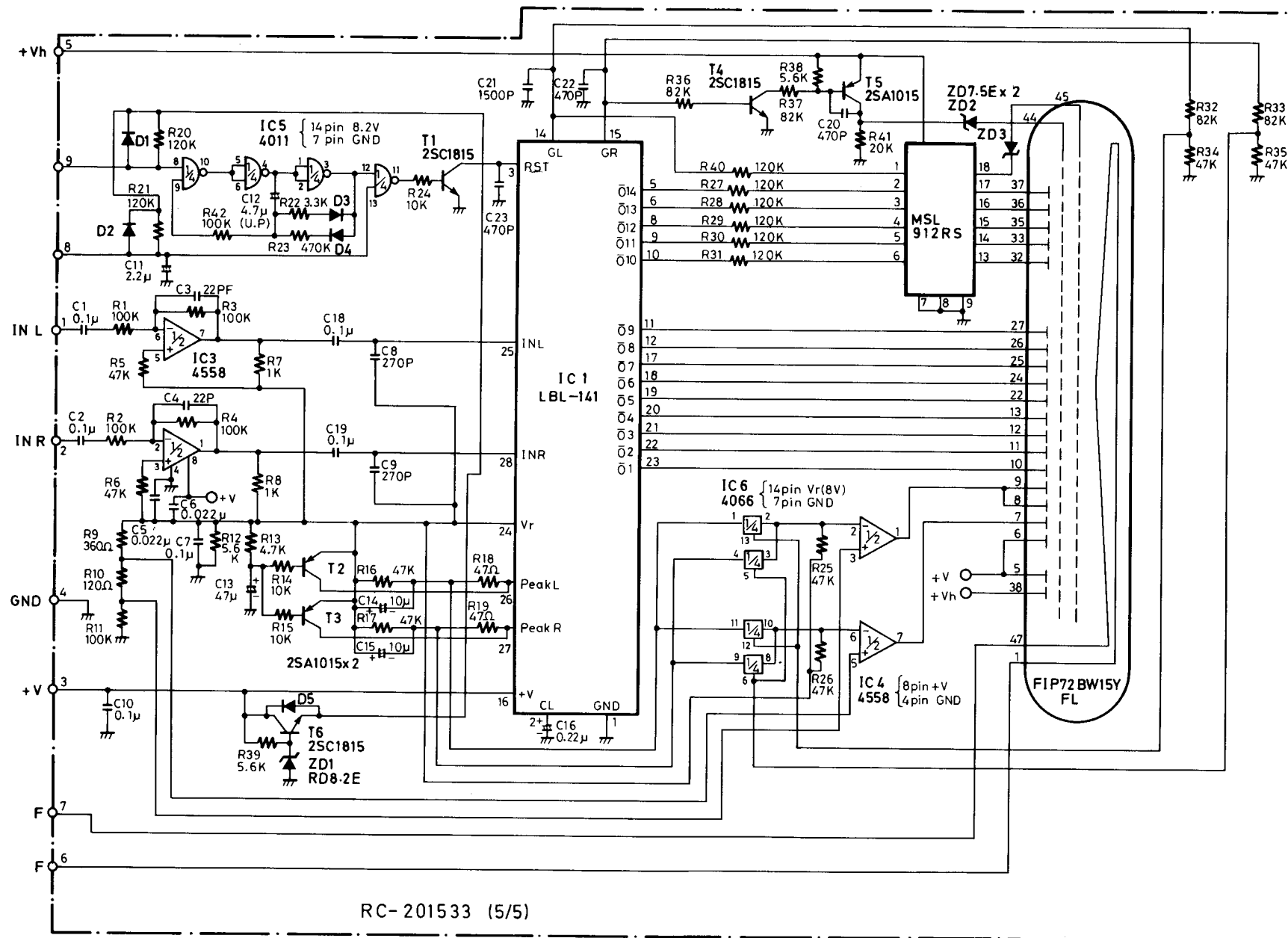




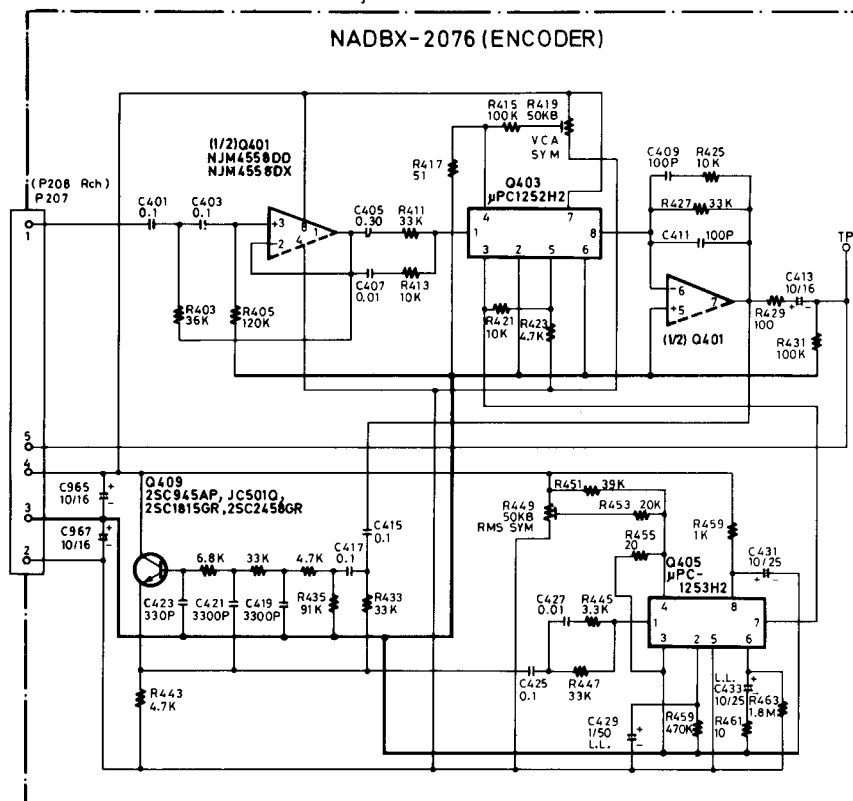


- NOTES
- ALL RESISTORS ARE IN OHMS 1/4WATT AND 1/8WATTS UNLESS OTHERWISE NOTED.
 - ALL CAPACITORS ARE IN μ F/20V UNLESS OTHERWISE NOTED.
 - ELECTROLYTIC CAPACITOR (—) IS IN μ F/PMV
 - VOLTAGE (MEASURED WITH V.T.V.M.) \square V IS DC VOLTAGE (NO INPUT SIGNAL).
 - THE COMPONENTS IDENTIFIED BY MARK Δ ARE CRITICAL FOR SAFETY. REPLACE ONLY WITH PART NUMBER SPECIFIED.

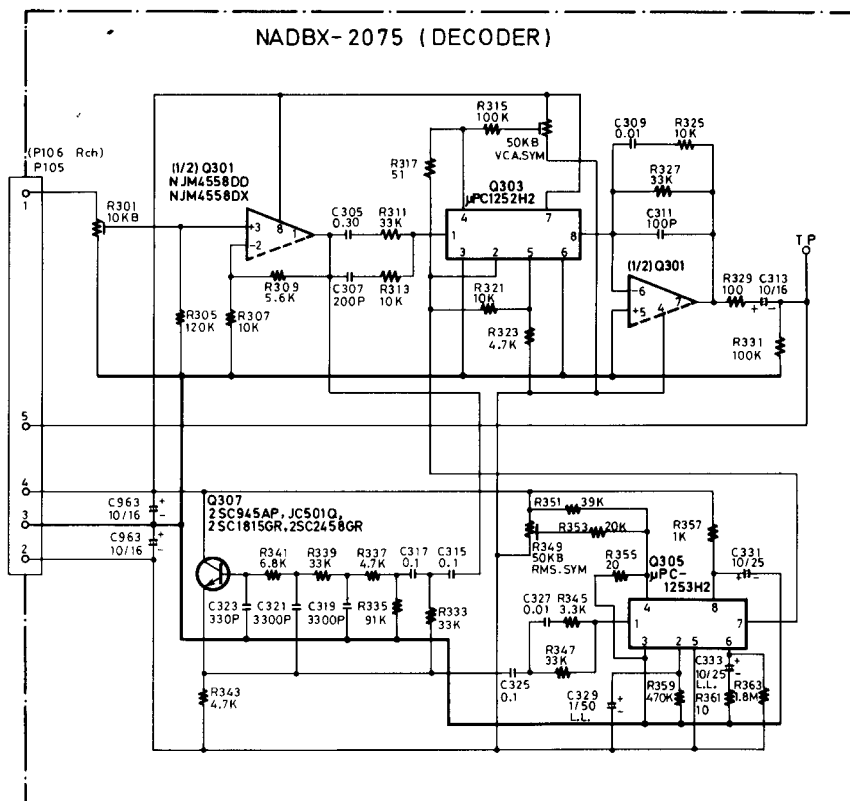
SCHEMATIC DIAGRAM-METER SECTION



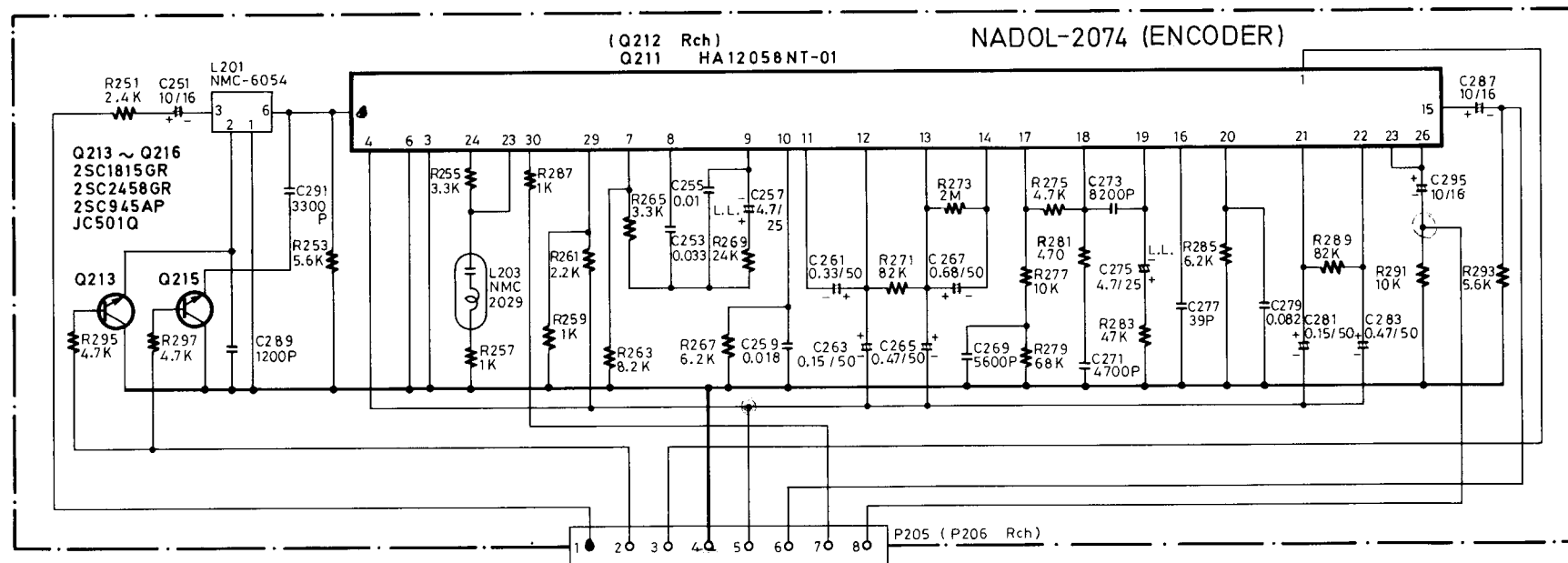
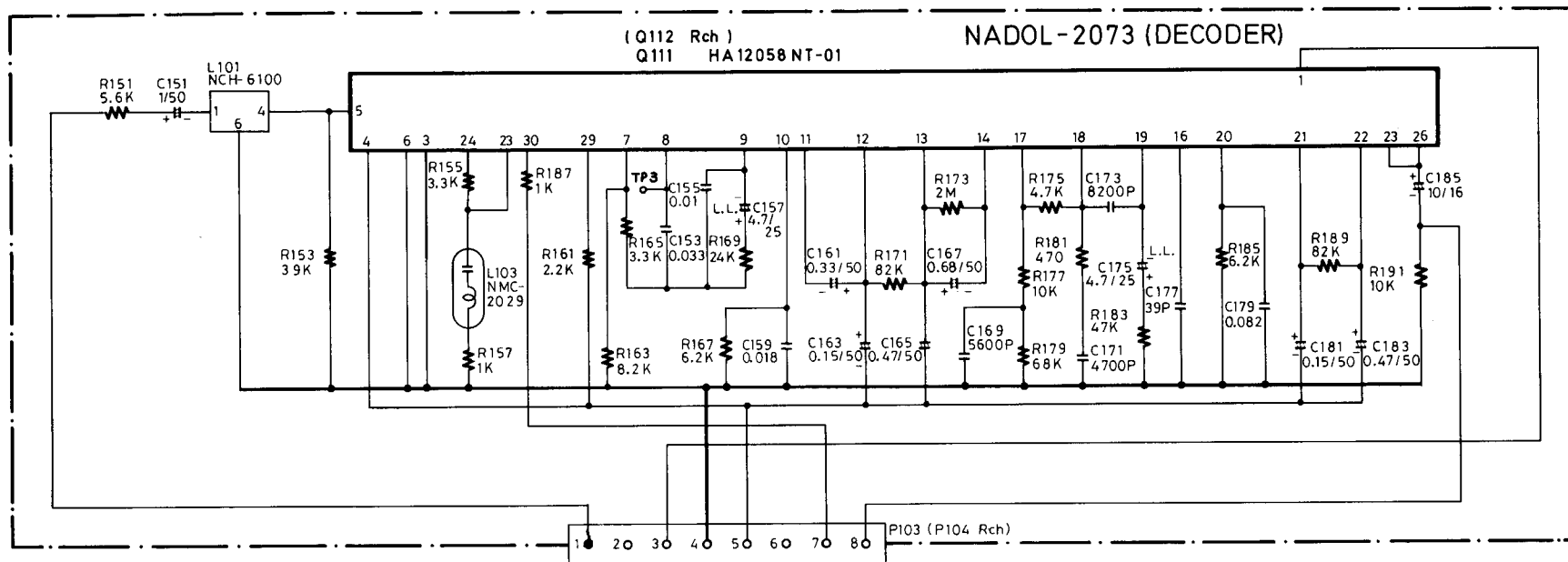
NADBX-2076 (ENCODER)



NADBX-2075 (DECODER)



SCHEMATIC DIAGRAM-DOLBY SECTION

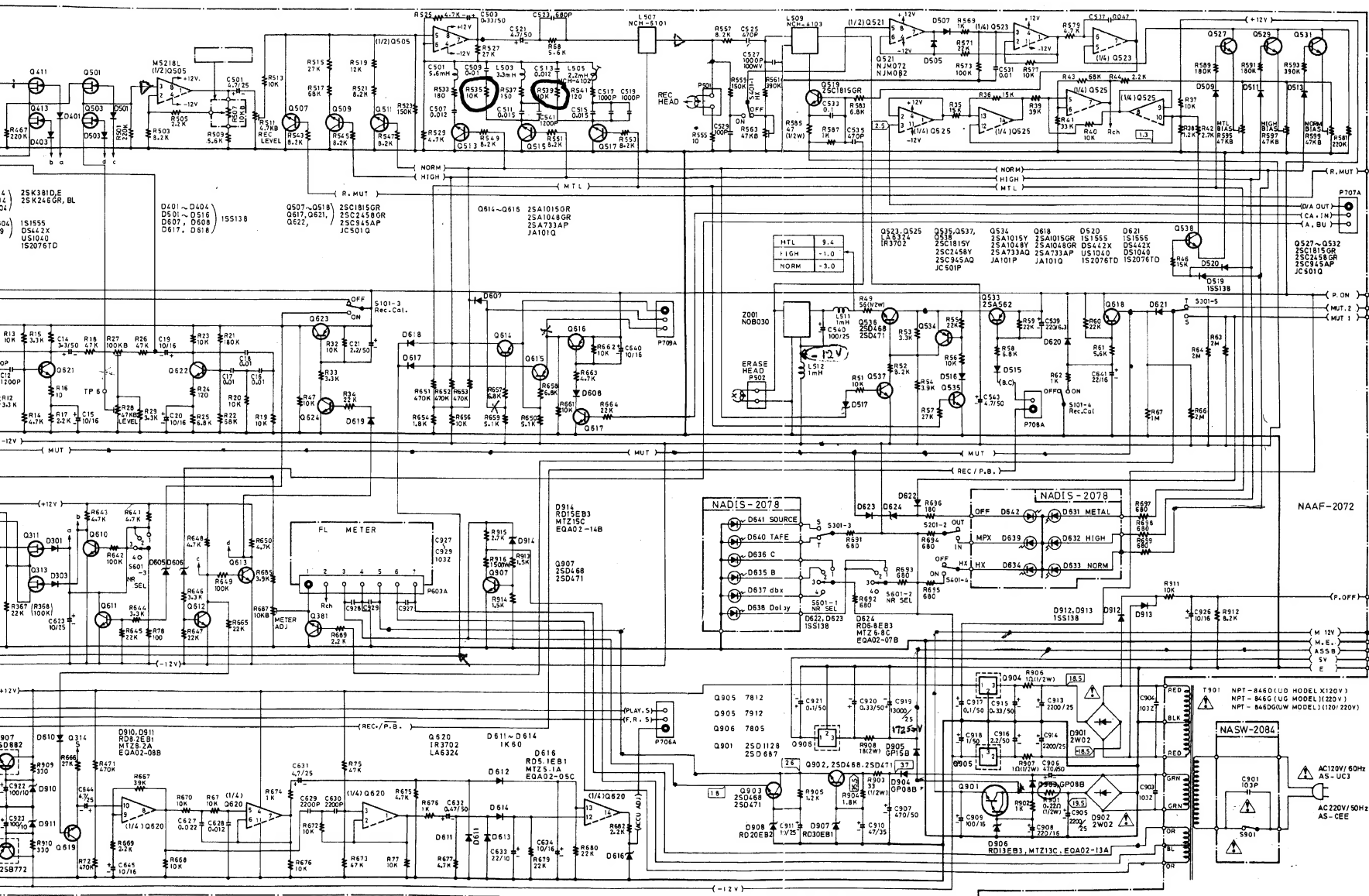


The diagram is a comprehensive electronic schematic for a stereo receiver, divided into seven main sections labeled A through G. It details the internal circuitry from input stages to output and control components.

- Section A:** Contains the input stages for Line and Mic signals, including preamplifiers and volume control circuitry.
- Section B:** Features the Master Volume control and the initial stages of the audio signal path.
- Section C:** Includes the Dolby Encode Unit (NADOL-2074) and the dbx Encode Unit (NABX-2076), which process the audio signals for noise reduction.
- Section D:** Contains the Dolby Decode Unit (NADOL-2073) and the dbx Decode Unit (NABX-2075), which reverse the noise reduction processing.
- Section E:** Shows the audio signal path after decoding, including various amplifiers and tone controls.
- Section F:** Details the output stage, including the power amplifier and the FL Meter (Flux Meter) for monitoring the tape's magnetic field.
- Section G:** Contains the final output stage, including the REC HEAD (Recording Head) and the PLAY HEAD (Playback Head).

The circuit is populated with a wide variety of components, including transistors (Q1-Q50), resistors (R1-R100), capacitors (C1-C50), and integrated circuits (IC1-IC10). A detailed component list is provided at the bottom of the page, identifying specific parts such as NJM4558BD, NJM4559DX, and various resistors and capacitors.

E F G H I J K



NOTES
ALL RESISTORS ARE IN OHMS UNLESS OTHERWISE NOTED.
ALL CAPACITORS ARE IN P.F.F.V. UNLESS OTHERWISE NOTED.
ELECTROLYTIC CAPACITORS ARE IN P.F.F.V. UNLESS OTHERWISE NOTED.
VOLTAGE (MEASURED WITH V.T.V.M.) IS DC VOLTAGE (INPUT SIGNAL).
THE COMPONENTS IDENTIFIED BY MARK Δ ARE CRITICAL FOR SAFETY.
PLEASE CHECK WITH PART NUMBER SPECIFIED.

SCHEMATIC DIAGRAM-METER SECTION

